MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

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L. A. CROWELL

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

DIVISION OF HEALTH SCIENCES LIBRARY

SEVENTY-SEVENTH ANNUAL SESSION

HELD AT

PINEHURST, NORTH CAROLINA

April 28, 29 and 30, 1930

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L. A. CROWELL, M.D., F.A.C.P., LINCOLNTON

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"It is understood that the Society is not to be considered as indorsing all the views and opinions of authors of papers published in the Transactions of the Society."

—*Extract from By-Laws, Chapter 10, Section 8*

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY, FROM ORGANIZATION TO 1804

Date	Place	President	Vice-Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1928

*Missing Data Not to be Found in Record

	Date	Place of Meeting	Number in Attendance	President	Vice-Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	.....	.....
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	.....
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson.	W. H. McKee	W. G. Hill	46	0	.....
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	.....
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	.....
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	.....
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	.....
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	.....
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	.....
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	.....
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	.....	.....
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	.....
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	.....
13	1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	W. G. Thomas	C. W. Graham	.....	.....	.....
14	1867	Tarboro	41	W. G. Thomas	.....	S. S. Satchwell	C. W. Graham	288	11	.....
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	.....	.....
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	.....	.....
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	.....	.....
18	1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	.....	.....
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	.....	.....

20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, P. T. Jerman.	James McKee	H. T. Bahnson	.....	.....	.....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	.....	.....	.....
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	.....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	.....
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	.....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith.	L. J. Picot	A. G. Carr	194	6	.....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	.....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	J. L. Picot	A. G. Carr	225	6	.....
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	.....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	.....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	.....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	.....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	.....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	C. M. Van Poole	438	7	.....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	C. M. Van Poole	452	7	.....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	M. P. Perry	306	6	.....
36	1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	M. P. Perry	410	6	.....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	M. P. Perry	414	6	.....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	M. P. Perry	422	6	.....
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	M. P. Perry	431	6	.....
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1926 *(Continued)*

*Missing Data Not to be Found in Records

Date		Place of Meeting	Number in Attendance	President	Vice-Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarbo ro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer,	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove.	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach	276	†J. A. Burroughs E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. Van Poole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse.	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68

63	1916	Durham	406	M. H. Fletcher	J. L Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1,087	11	81
						Secy-Treas.	Acting			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thomas I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
						Secretary-Treasurer				
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken.	L. B. McBrayer		1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill, ‡Eugene B. Glenn, D. A. Garrison.	L. B. McBrayer		1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt.	L. B. McBrayer		1,657	10	116
73	1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass.	L. B. McBrayer		1,663	10	107
74	1927	Durham	653	John Q. Myers	J. W. Carroll, A. Y. Linville, C. H. Cocke.	L. B. McBrayer		1,691	10	121
75	1928	Pinehurst	611	John T. Burrus	G. H. Macon, R. F. Leinbach, W. R. Griffin.	L. B. McBrayer		1,738	11	143
76	1929	Greensboro	671	Thurman D. Kitchin	Dr. W. L. Dunn,* Asheville; Dr. D. T. Tayloe Jr., Washington, Dr. W. D. James, Hamlet.	L. B. McBrayer		1,666	11	146
77	1930	Pinehurst	701	L. A. Crowell	W. B. Murphy, Wm. E. Warren, N. B. Adams.	L. B. McBrayer		1,711	11	155

*Died during his term of office.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

JAMES H. DICKSON, Wilmington....1859-1866
CHARLES E. JOHNSON, Raleigh....1859-1866
CALEB WINSLOW, Hertford....1859-1866
OTIS F. MANSON, Townsville....1859-1866
WILLIAM H. McKEE, Raleigh....1859-1866
CHRISTOPHER HAPPOLDT, Morganton....1859-1866
J. GRAHAM TULL, New Bern....1859-1866
SAMUEL T. IREDELL, Secretary....1859-1866

SECOND BOARD

N. J. PITTMAN, Tarboro....1866-1872
E. BURKE HAYWOOD, Raleigh....1866-1872
R. H. WINBORNE, Edenton....1866-1872
S. S. SATCHWELL, Rocky Point....1866-1872
J. J. SUMMERELL, Salisbury....1866-1872
R. B. HAYWOOD, Raleigh....1866-1872
M. WHITEHEAD, Salisbury....1866-1872
J. F. SHAFFNER, Salem....1868-1872
WILLIAM LITTLE, Secretary....1866-1867
THOMAS F. WOOD, Secretary, Wilmington....1867-1872

THIRD BOARD

CHARLES J. O'HAGAN, Greenville....1872-1878
W. A. B. NORCOM, Edenton....1872-1878
C. TATE MURPHY, Clinton....1872-1878
GEORGE A. FOOTE, Warrenton....1872-1878
J. W. JONES, Tarboro....1872-1878
R. L. PAYNE, Lexington....1872-1878
CHARLES DUFFY, JR., Secretary, New Bern....1872-1878

FOURTH BOARD

PETER E. HINES, Raleigh....1878-1884
THOMAS D. HAIGH, Fayetteville....1878-1884
GEORGE L. KIRBY, Goldsboro....1878-1884
THOMAS F. WOOD, Wilmington....1878-1884
JOSEPH GRAHAM, Charlotte....1878-1884
[1]ROBERT I. HICKS, Williamston....1878-1880
[2]RICHARD H. LEWIS, Raleigh....1880-1884
HENRY T. BAHNSON, Secretary, Salem....1878-1884

FIFTH BOARD

WILLIAM R. WOOD, Scotland Neck....1884-1890
AUGUSTUS W. KNOX, Raleigh....1884-1890
FRANCIS DUFFY, New Bern....1884-1890
PATRICK L. MURPHY, Morganton....1884-1890
WILLIS ALSTON, Littleton....1884-1890
J. A. REAGAN, Weaverville....1884-1890
W. J. H. BELLAMY, Secretary, Wilmington....1884-1890

SIXTH AND SEVENTH BOARDS

R. L. PAYNE, JR., Lexington....1890-1892
GEORGE W. PUREFOY, Asheville....1890-1892
GEORGE G. THOMAS, Wilmington....1890-1894
ROBERT S. YOUNG, Concord....1890-1894
WILLIAM H. WHITEHEAD, Rocky Mount....1890-1896
GEORGE W. LONG, Graham....1890-1896
L. J. PICOT, Secretary, Littleton....1890-1896
JULIAN M. BAKER, Tarboro....1892-1898
H. B. WEAVER, Secretary, Asheville....1892-1898
[3]J. M. HAYS, Greensboro....1894-1897
[4]KEMP P. BATTLE, JR., Raleigh....1897-1900

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[1]Resigned before expiration of term.
[2]Elected for unexpired term of Dr. Hicks.
[3]Died before the expiration of his term.
[4]Elected to serve unexpired term of Dr. Hays.

[1]THOMAS S. BURBANK, Wilmington....1894-1898
[2]WILLIAM H. H. COBB, Goldsboro....1898-1900
[1]RICHARD H. WHITEHEAD, Chapel Hill....1896-1898
[3]J. HOWELL WAY, Secretary, Waynesville....1898-1902
DAVID T. TAYLOE, Washington....1896-1902
THOMAS E. ANDERSON, Secretary, Statesville....1896-1902
[4]ALBERT ANDERSON, Wilson....1898-1902
[4]EDWARD C. REGISTER, Charlotte....1898-1902
[4]THOMAS S. McMULLAN, Hertford....1900-1902
[4]JOHN C. WALTON....1900-1902

EIGHTH BOARD

A. A. KENT, Lenoir....1902-1908
CHARLES O'H. LAUGHINGHOUSE, Greenville....1902-1908
M. H. FLETCHER, Asheville....1902-1908
JAMES M. PARROTT, Kinston....1902-1908
J. T. J. BATTLE, Greensboro....1902-1908
FRANK H. RUSSELL, Wilmington....1902-1908
[1]GEORGE W. PRESSLY, Secretary, Charlotte....1902-1906
[5]G. T. SIKES, Secretary, Grissom....1906-1908

NINTH BOARD

LEWIS B. McBRAYER, Asheville....1908-1914
JOHN C. RODMAN, Washington....1908-1914
WILLIAM W. McKENZIE, Salisbury....1908-1914
HENRY H. DODSON, Greensboro....1908-1914
JOHN BYNUM, Winston-Salem....1908-1914
J. L. NICHOLSON, Richlands....1908-1914
BENJ. K. HAYS, Secretary, Oxford....1908-1914

TENTH BOARD

ISAAC M. TAYLOR, Morganton....1914-1920
JOHN Q. MYERS, Charlotte....1914-1920
JACOB F. HIGHSMITH, Fayetteville....1914-1920
MARTIN L. STEVENS, Asheville....1914-1920
[6]CHARLES T. HARPER, Wilmington....1914-1915
[7]EDWIN G. MOORE, Elm City....1915-1920
[8]JOHN G. BLOUNT, Washington....1914-1920
HUBERT A. ROYSTER, Secretary, Raleigh....1914-1920

ELEVENTH BOARD

LESTER A. CROWELL, Lincolnton....1920-1926
WILLIAM P. HOLT, Duke....1920-1926
J. GERALD MURPHY, Wilmington....1920-1926
LUCIUS N. GLENN, Gastonia....1920-1926
CLARENCE A. SHORE, Raleigh....1920-1926
WILLIAM M. JONES, Greensboro....1920-1926
KEMP P. B. BONNER, Secretary, Morehead City....1920-1926

TWELFTH BOARD

PAUL H. RINGER, President, Asheville....1926-1932
W. HOUSTON MOORE, Wilmington....1926-1932
T. W. M. LONG, Roanoke Rapids....1926-1932
[6]W. W. DAWSON, Grifton....1926-1932
J. K. PEPPER, Winston-Salem....1926-1932
FOY ROBERSON, Durham....1926-1932
JOHN W. McCONNELL, Secretary, Davidson....1926-1932
[9]DAVID T. TAYLOE, JR., Washington....1930-1932

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[1]Resigned before the expiration of his term.
[2]Elected to serve the unexpired term of Dr. Burbank.
[3]Elected to serve the unexpired term of Dr. Whitehead.
[4]Elected for short term expiring in 1902.
[5]Elected to serve the unexpired term of Dr. Pressly.
[6]Died before the expiration of his term.
[7]Elected to serve the unexpired term of Dr. Harper.
[8]Died a few months before the expiration of his term; such a short time that the vacancy was not filled.
[9]Elected to serve unexpired term of Dr. W. W. Dawson.

NOTE: In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two legal terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the members ship was overlapping.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1928

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1883
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph. D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph. D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1897
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1892 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1891 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1892 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph. D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1894 to 1897
W. P. Beall, M. D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph. D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

MEMBERS STATE BOARD OF HEALTH—Continued

Name	Address	Appointed by	Term
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1900
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.[1]	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.[2]	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.[1]	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.[3]	Henderson	State Society	1919 to 1923
A. J. Crowell, M. D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.[4]	Asheville	Gov. Cameron Morrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1925
J. Howell Way, M. D., President	Waynesville	Gov. Cameron Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. Cameron Morrison	1923 to 1929
James P. Stowe, Ph.G.	Charlotte	Gov. Cameron Morrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse, M.D.[5]	Greenville	State Society	1923 to 1926
Cyrus Thompson, M.D.	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.[1]	Raleigh	Gov. A. W. McLean	1925 to 1931
Jno. B. Wright, M.D.	Raleigh	Gov. A. W. McLean	1926 to 1931
E. J. Tucker, D.D.S.	Roxboro	Gov. A. W. McLean	1925 to 1931
W. S. Rankin, M.D.[4]	Charlotte	State Board of Health	1926 to 1927
L. E. McDaniel, M.D.	Jackson	State Board of Health	1927 to 1929
Chas. C. Orr, M.D.	Asheville	Gov. A. W. McLean	1927 to 1929
Thomas E. Anderson, M.D.	Statesville	State Society	1929 to 1935
L. E. McDaniel, M.D.	Jackson	State Society	1929 to 1935
James P. Stowe, Ph.G.	Charlotte	Gov. A. W. McLean	1927 to 1933
A. J. Crowell, M.D.	Charlotte	Gov. O. Max Gardner	1929 to 1935
Chas. C. Orr, M.D.	Asheville	Gov. O. Max Gardner	1929 to 1935

[1]Died leaving unexpired term.
[2]Resigned to become member of General Assembly.
[3]Resigned to become Health Officer Vance County.
[4]Resigned.
[5]Resigned to become Secretary of State Board of Health.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1916-1930

County	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Alamance-Caswell *a*	10	12	10	15	27	27	31	27	27	25	27	30	30	32	33
Alexander *b*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Alleghany	2	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Anson	....	....	1	3	2	1	2	12	12	11	10	6	8	8	6
Ashe	....	11	15	8	7	5	9	8	6	10	6	8	6	5	5
Avery	9	9	7	6	4	5	4	5	5	5	5	6	6	6	5
Beaufort	14	10	11	10	14	12	14	17	14	17	17	17	17	16	18
Bertie	3	3	5	5	10	9	12	10	9	9	8	8	8	6	7
Bladen	6	9	8	9	8	7	7	4	3	8	7	8	8	8	8
Brunswick	....	....	2	2	2	1	1	1	1	1	1	1	4	6	2
Buncombe	71	74	76	81	83	92	96	99	105	97	102	118	120	118	113
Burke	17	16	17	6	11	12	11	15	13	14	11	11	12	12	17
Cabarrus	25	20	22	19	20	19	21	23	19	21	21	22	27	27	23
Caldwell	7	9	13	12	10	10	12	12	10	11	14	15	15	13	15
Camden *c*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carteret	9	7	4	7	9	9	8	12	10	10	12	12	11	11	12
Caswell *d*	1	1	1	3	2	2	1	1	1	2	....	....	....	....	....
Catawba	13	18	....	5	18	16	22	20	19	16	16	21	16	17	13
Chatham	11	11	11	7	10	11	6	7	9	9	7	9	8	9	9
Cherokee	9	11	10	6	10	10	10	10	9	10	9	8	10	10	10
Chowan-Perquimans	4	3	....	6	8	7	6	7	8	5	9	10	9	7	8
Clay *e*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland	13	16	16	17	19	16	19	18	18	17	19	20	20	22	23
Columbus	11	7	1	6	10	8	9	14	11	12	14	15	14	14	15
Craven	8	11	7	7	6	6	8	10	12	14	16	17	15	14	13
Cumberland	19	17	16	15	20	24	23	22	32	31	28	29	28	22	26
Currituck	6	6	1	5	5	5	5	4	4	4	4	3	2	1	1
Dare *f*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Davidson	9	20	20	19	18	16	18	18	22	20	19	19	18	17	16
Davie	6	5	4	4	4	4	4	6	4	5	4	5	5	5	5
Duplin	7	10	9	9	10	12	11	12	12	13	13	13	9	11	9
Durham-Orange	41	44	35	33	45	40	43	43	47	53	60	64	63	65	67
Edgecombe	13	10	10	7	15	15	15	12	10	11	12	12	12	7	10
Forsyth	42	45	37	37	57	62	60	59	62	63	64	66	74	59	70
Franklin	11	10	11	11	12	10	12	12	12	12	12	10	12	11	10
Gaston	25	27	27	26	35	38	39	40	40	39	40	38	39	39	36
Gates	....	....	....	1	....	....	....	1	1	1	....	....	1	2	2
Graham	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Granville	16	16	14	14	15	14	14	12	13	13	12	12	14	13	13
Greene	6	5	2	5	6	7	7	5	6	5	5	5	5	5	5
Guilford	66	68	67	72	77	78	80	87	93	107	112	119	123	130	124
Halifax	15	8	1	7	28	24	24	18	21	20	16	14	17	17	16
Harnett	15	17	15	14	16	15	16	15	15	13	12	16	16	15	14
Haywood	11	11	9	9	11	10	12	13	13	14	14	13	8	14	14
Henderson-Polk *g*	15	15	11	13	15	13	13	13	13	14	17	19	16	16	19
Hertford	1	5	10	10	10	10	10	10	10	8	8	7	7	6	5
Hoke	....	10	11	10	10	8	6	8	9	11	10	11	12	14	14
Hyde	....	....	1	2	1	1	2	1	2	1	1	1	1	1	1
Iredell-Alexander	9	20	11	11	21	18	20	19	20	26	29	34	37	39	38
Jackson	2	5	2	5	5	6	6	6	8	7	7	6	5	6	6
Johnston	19	22	16	24	22	23	26	25	25	24	28	24	23	18	23
Jones	....	....	....	....	....	....	1	2	1	4	4	3	3	3	3
Lee	8	8	6	8	8	8	10	10	11	13	13	13	14	16	13
Lenoir	15	16	15	17	22	19	20	17	20	18	20	22	23	20	22
Lincoln	11	9	11	15	16	14	13	14	16	11	11	12	13	14	13
Macon-Clay	5	4	6	6	6	7	7	7	7	6	8	8	9	6	8
Madison	9	10	....	11	11	12	8	11	11	11	11	5	12	7	5
Martin	15	17	12	11	16	14	12	13	10	10	10	10	10	10	8
McDowell	7	8	7	6	6	5	5	6	7	8	7	8	7	9	12
Mecklenburg	74	63	49	97	104	107	110	115	109	121	117	104	119	125	128
Mitchell-Watauga	2	1	....	4	5	8	10	10	7	7	8	7	9	8	6
Montgomery	9	9	8	6	8	11	10	9	9	8	9	9	10	11	9
Moore	18	10	15	16	16	17	21	20	20	19	21	17	20	22	17
Nash	26	27	21	26	25	26	30	30	33	34	32	31	30	30	33
New Hanover	41	30	29	38	40	46	51	46	44	42	40	41	38	32	38
Northampton	10	14	11	13	10	11	11	10	10	10	11	9	9	6	3
Onslow	9	11	7	9	8	7	7	5	6	6	5	5	6	5	5
Orange *h*	....	....	....	....	....	6	....	....	....	....	....	....	....	....	....
Pamlico	5	5	4	4	5	6	5	5	4	5	5	5	5	5	4
Pasquotank-Camden-Dare	17	19	16	15	16	11	19	18	17	18	19	18	16	14	17
Pender	....	....	4	3	1	1	2	2	1	1	1	1	1	1	1
Perquimans *i*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Person	13	12	....	12	10	11	10	10	10	8	7	7	7	6	6
Pitt	9	14	5	18	24	19	24	23	24	26	24	26	31	24	27
Polk *j*	....	....	....	....	....	....	....	....	....	....	5	6	6	6	6
Randolph	11	13	11	12	13	15	14	14	13	14	12	10	11	10	8

STATUS OF MEMBERSHIP BY COUNTIES—Continued

County	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Richmond	13	14	11	13	12	14	13	14	16	19	18	18	18	14	17
Robeson	22	16	8	31	35	34	33	27	29	30	31	28	28	21	24
Rockingham	10	4	15	16	20	23	25	21	23	26	23	24	21	20	24
Rowan	25	23	22	24	28	31	32	32	36	40	40	40	42	35	35
Rutherford	21	14	17	18	20	12	18	22	21	21	22	24	22	22	22
Sampson	18	15	10	11	13	14	12	13	17	15	14	13	13	10	13
Scotland	12	13	10	9	10	12	12	12	12	12	12	12	12	12	10
Stanly	9	14	11	11	15	12	11	12	15	14	13	15	14	14	16
Stokes	12	10	5	5	10	6	12	9	10	10	5	7	8	6	2
Surry	18	23	24	28	28	25	25	24	26	22	17	20	22	20	20
Swain	....	6	7	2	3	1	4	3	1	1	1	....	....	....	....
Transylvania	7	5	....	1	1	1	5	6	4	8	4	5	7	4	2
Tyrrell *k*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Union	12	13	15	14	16	17	17	18	18	19	19	16	16	14	13
Vance	13	10	4	5	11	11	10	10	12	11	12	11	11	11	12
Wake	62	70	56	81	68	73	76	85	73	78	79	78	80	84	94
Warren	7	7	6	3	8	8	7	7	6	6	6	6	6	6	6
Washington-Tyrrell	....	....	....	....	....	10	9	9	9	8	8	6	6	5	3
Watauga *l*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	17	19	18	27	28	24	33	32	29	32	34	32	38	38	38
Wilkes	6	9	8	10	10	11	10	10	10	10	9	14	11	10	10
Wilson	22	24	21	25	29	31	28	31	31	32	34	34	35	31	28
Yadkin	....	....	....	10	2	5	4	3	2	3	2	2	3	5	10
Yancey	....	....	....	3	3	1	1	1	1	1	2	7	5	3	4
Totals	1228	1271	1087	1306	1497	1491	1571	1592	1606	1657	1666	1691	1738	1669	1694

a The figures for 1926 are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* The figures for 1926 are for Henderson only; for the other years, for Henderson-Polk; *h* See Durham-Orange; *i* See Chowan-Perquimans; *j* See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Abel, J. F.....Waynesville
Abernathy, H. N.....Charlotte
*Achorn, John W.....Pinebluff
Adams, M. R.....Statesville
Alexander, Chas A.....Burlington
Alexander, Jas. R.....Charlotte
Allen, Rufus L.....Waynesville
*Alston, B. P.....Epsom
Ambler, C. P.....Asheville
Anderson, Albert.....Raleigh
Anderson, Chas. A.....Burlington
Anderson, Thos. Eli....Statesville
*Archery, L. M.....Concord
*Asbury, F. E.....Asheboro
Ashworth, Benj. L.....Marion
Ashworth, W. C.....Greensboro
*Attmore, Geo. S.....Stonewall
*Bahnson, H. T.....Winston-Salem
Baker, J. M.....Tarboro
*Barrier, P. A.....Mt. Pleasant
Bass, H. H.....Durham
Battle, J. T. J.....Greensboro
*Battle, Kemp P.....Raleigh
*Battle, S. W.....Asheville
*Beall, Wm. P.....Greensboro
*Bellamy, W. J. H.....Wilmington
Boddie, N. P.....Durham
*Bolton, Mahlon.....Rich Square
*Booth, Samuel D.....Oxford
Brown, G. A.....Mt. Ulla
Brown, J. S.....Hendersonville
Brownson, W. C.....Asheville
*Bullock, D. W.....Wilmington
Burrus, John T.....High Point
Bynum, John.....Winston-Salem
*Caldwell, D. G.....Concord
*Cheatham, Archibald.....Durham
Cheesborough, Thos. P...Asheville
*Clark, G. L.....Clarkton
Cotton, Clyde E.....Asheville
Council, J. B.....Salisbury
*Covington, J. M.....Wadesboro
Cox, E. L.....Jacksonville
*Croom, J. D.....Maxton
Crowell, A. J.....Charlotte
Crowell, L. A.....Lincolnton
Daligny, Charles.....Troy
*Dalton, David N...Winston-Salem
Davis, Thomas W..Winston-Salem
Davidson, John E. S.....Charlotte
DeArmon, J. McC.....Charlotte
*Denny, Wm. W.....Pink Hill
Dickinson, E. T.....Wilson
*Dillard, Richard, Jr.....Edenton
*Dodson, H. H.....Greensboro
*Duffy, Charles.....New Bern
*Duffy, Francis.....New Bern
Eddlerman, H. M.....Gastonia
Edgerton, Jas. L...Hendersonville
*Edwards, G. C.....Hookerton
Edwards, J. D.....Siler City
Ellis, R. C.....Shelby
*Faison, I. W.....Charlotte
*Faison, Wm. W.....Goldsboro
*Fletcher, M. H.....Asheville
Flippin, Samuel T.....Siloam
*Fox, M. F.....Guilford College
*Freeman, Richard A...Burlington
Galloway, W. C.....Wilmington
Garrison, David A.....Gastonia
Gibbon, Robert L.....Charlotte
*Gilmer, Chas. S...Greensboro, R. 6
Gilreath, Frank H...N. Wilkesboro
Goley, Wm. R.....Graham
*Goodman, E. G.....Lanvale
Goodwin, A. W.....Raleigh
Gouger, Geo. J.....Concord
Gove, Anna M.....Greensboro
Grady, James C.....Kenly
Grady, Wm. Earle.....Tryon
*Graham, Joseph.....Charlotte
*Graham, Wm. A.....Charlotte
*Griffin, J. A.....Clayton
Griggs, W. T.....Poplar Branch
*Hall, Wright.....Wilmington
*Halsey, B. F.....Roper
*Hargrove, R. H.....Robersonville
Harris, F. R.....Henderson
*Harris, I. A.....Weaverville
Harrison, Edmund.....Greensboro
Harris, A. H.....Wilmington
Hays, Benj. K.....Oxford
*Haywood, F. J.....Raleigh
*Haywood, Hubert, Sr.....Raleigh

*Deceased.

Herring, B. S.....Wilson
*Hicks, Wm. N.....Durham
*Hicks, Romeo.....Henrietta
Highsmith, Chas.....Dunn
Highsmith, J. F.....Fayetteville
*Hill, L. H.....Germantown
Holloway, Robt. L...West Durham
Holt, Wm. P.....Erwin
Holt, Wm. T.....Greensboro
Houck, Albert F.....Lenoir
Hubbard, C. C.....Farmer
*Hudson, Wm. L.....Dunn
*Hughes, Francis W.....New Bern
Hunter, L. W.....Charlotte
Ingram, Chas. B.....Mt. Gilead
Irwin, J. R.....Charlotte
Jenkins, Chas. L.....Raleigh
Jewett, Robert D.....Wilmington
Johnson, N. M.....Durham
Jones, Clara E.....Goldsboro
Jones, A. G.....Walnut Cove
Jordan, Chas. S.....Asheville
Jordan, T. M.....Raleigh
Julian, Charles A.....Greensboro
Kent, Alfred A..Winter Park, Fla.
Kerr, J. Edwin....Winston-Salem
*Knight, J. B. H.....Williamston
Knight, Wm. P.....Greensboro
Knox, A. W.....Raleigh
Koonce, S. E.....Wilmington
Lamm, Isaac W.....Lucama
Laughinghouse, Chas. O'H. Raleigh
*Leggett, Kenelm.....Hobgood
Lewis, Geo. W.....Wilson
Lewis, H. W.....Jackson
*Lewis, R. H.....Raleigh
Linville, A. Y.....Winston-Salem
*Long, Benj. L.....Hamilton
*Long, Geo. W.....Graham
Long, H. F.....Statesville
*Long, J. W.....Greensboro
*Love, W. J.....Wilmington
Lyle, S. H.....Franklin
McAnally, W. J.....High Point
McBrayer, L. B....Southern Pines
McCampbell, John.....Morganton
*McDonald, A. D.....Wilmington
McGeachy, R. S.....Kinston
McGee, J. W.....Raleigh
*McKay, A. M.....Summerville
*McKay, John A.....Buies Creek
McKay, Joseph F.....Buies Creek
*McKee, James.....Raleigh
*McKenzie, W. W.....Salisbury
McLaughlin, J. E.....Statesville
McMillan, Benj. F....Red Springs
*McMillan, J. D.....Lumberton
*McMillan, J. L.....Red Springs
McMillan, W. D.....Wilmington
*McNeill, J. W.....Fayetteville
*McNeill, Wm. M.....Buies Creek
Manning, I. H.....Chapel Hill
Manning, J. M.....Durham
Menzies, H. C.....Hickory
Michaux, E. R.....Greensboro
*Miller, J. F.....Goldsboro
*Minor, Chas. L.....Asheville
Misenheimer, C. A.....Charlotte
*Misenheimer, Theo. F.....Morven
*Monroe, W. A.....Sanford
Montgomery, John C....Charlotte
Moore, C. E.....Wilson
Moore, Edwin G.....Elm City
Morris, J. A.....Oxford
Moseley, Chas. W.....Greensboro
Munroe, J. P.....Charlotte
Nelson, R. J.....Robersonville
Nisbet, W. O.....Charlotte
*Nicholson, J. L.....Richland
Nicholson, P. A.....Washington
*Nicholson, Sam T.....Washington
*Noble, R. J.....Selma
Parrott, J. M.....Kinston
*Pate, Wm. T.....Gibson
Pemberton, Wm. D.....Concord
Person, James B., Jr.....Selma
*Perry, M. P.....Macon
Pfohl, Samuel F...Winston-Salem
*Pharr, T. F.....Concord
*Pharr, Wm. W.....Charlotte
*Phillips, Matthew D.....Dalton
*Picot, L. J.....Littleton
Pressly, G. W.....Charlotte
*Prince, D. M.....Laurinburg
Rankin, W. S.....Charlotte
Redding, Alex H.....Asheboro
*Register, Edw. C.....Charlotte
Reid, Geo. P.....Forest City

*Deceased.

Reynolds, C. V.....Asheville
*Ritter, F. W.....Moyock
Rodman, J. C.....Washington
Rodwell, J. W.....Mocksville
Rogers, Wiley A.....Franklin
Royster, H. A.....Raleigh
Royster, W. I.....Raleigh
Sawyer, C. J.....Windsor
Schaub, O. P.....Winston-Salem
Schonwald, J. T.....Wilmington
Sevier, D. E.....Asheville
Sevier, J. T.....Asheville
*Shaffner, J. F., Sr..Winston-Salem
Shields, H. B.....Carthage
Shamburger, J. B.....Star
Sikes, G. T.....Creedmoor
*Smith, J. B.....Pilot Mountain
Smith, R. A.....Goldsboro
*Snipes, E. P.....Jonesboro
Spainhour, Ellis H., Winston-Salem
*Speight, R. H., Sr.....Whitakers
Spencer, W. O.....Winston-Salem
Stamps, Thos.....Lumber Bridge
Stanton, D. A.....High Point
*Stevens, J. A.....Clinton
Stevens, M. L.....Asheville
Strickland, Edw. F., Winston-Salem
Stringfield, Thos.....Waynesville
Strong, Chas. Moore....Charlotte
Summerell, E. M.....China Grove
*Summers, Chas. L., Baltimore, Md. (Forsyth Co.)
Tayloe, D. T., Sr.....Washington
*Taylor, I. M.....Morganton
Tennent, G. S.....Asheville
*Thomas, G. G.....Wilmington
*Trantham, H. T.....Salisbury
*Tull, Henry.....Kinston
Van Poole, C. M.....Salisbury
Vestal, W. J.....Lexington
*Von Ruck, Karl.....Asheville
Ward, W. H.....Plymouth
*Way, J. Howell.....Waynesville
Weaver, H. B.....Asheville
Wessell, Jno. C.....Wilmington
Wharton, L. D.....Smithfield
Whisnant, A. M.....Charlotte
*Whitaker, R. A.....Kinston
White, J. W.....Wilkesboro
*Whitehead, John .....Salisbury
*Whitehead, W. H...Rocky Mount
Whitfield, Wm. Cobb.....Grifton
*Whittington, W. P.....Asheville
Williams, John D., Guilford Station
*Williams, J. H.....Asheville
Wilson, A. R.....Greensboro
Wright, Jno. B.....Raleigh
Yarborough, Richard F., Louisburg
*Young, R. S.....Concord

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany.....Baltimore, Md.
W. W. Keen.....Philadelphia, Pa.
J. Allison Hodges.....Richmond, Va.
*R. L. Payne.....Norfolk, Va.
*J. N. McCormack.....Bowling Green, Ky.
R. L. Payne, Jr.....Norfolk, Va.
J. L. Ludlow, C. E.....Winston-Salem
Paul V. Anderson.....Richmond, Va.
Stuart McGuire.....Richmond, Va.
William J. Mayo.....Rochester, Minn.
William Seaman Bainbridge.....New York, N. Y.
William Sharpe.....New York, N. Y.
William McKim Marriott.....St. Louis, Mo
James K. Hall.....Richmond, Va.

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*Deceased.

OFFICERS 1929-1931

OFFICERS, 1929-1930

President—Dr. L. A. Crowell.....Lincolnton
First Vice-President—Dr. W. B. Murphy.....Snow Hill
Second Vice-President—Dr. Wm. E. Warren.....Williamston
Third Vice-President—Dr. N. B. Adams.....Murphy
Secretary-Treasurer—Dr. L. B. McBrayer *(1928-1931)*.....Southern Pines

OFFICERS, 1930-1931

President—Dr. J. G. Murphy.....Wilmington
President-elect—Dr. M. L. Stevens.....Asheville
First Vice-President—Dr. C. A. Julian.....Greensboro
Second Vice-President—Dr. J. W. Davis.....Statesville
Secretary-Treasurer—Dr. L. B. McBrayer *(1928-1931)*.....Southern Pines

COUNCILORS, 1928-1931

First District—Dr. H. D. Walker.....Elizabeth City
Second District—Dr. Grady G. Dixon.....Ayden
Third District—Dr. J. B. Cranmer.....Wilmington
Fourth District—Dr. W. H. Smith.....Goldsboro
Fifth District—Dr. E. A. Livingston.....Gibson
Sixth District—Dr. V. M. Hicks.....Raleigh
Seventh District—Dr. T. C. Bost.....Charlotte
Eighth District—Dr. R. B. Davis.....Greensboro
Ninth District—Dr. M. R. Adams.....Statesville
Tenth District—Dr. J. F. Abel.....Waynesville

CHAIRMEN OF SECTIONS, 1930-1931

Public Health and Education—Dr. John D. Kerr.....Clinton
Surgery—Dr. Deryl Hart.....Durham
Eye, Ear, Nose and Throat—Dr. J. M. Lilly.....Fayetteville
Gynecology and Obstetrics—Dr. R. T. Ferguson.....Charlotte
Pediatrics—Dr. Charles R. Bugg.....Raleigh
Practice of Medicine—Dr. Wm. B. Dewar.....Raleigh

DELEGATES TO AMERICAN MEDICAL ASSOCIATION, 1930-1932

Dr. Chas. A. Woodard, 1930.....Wilson
Dr. H. A. Royster, 1930 and 1931.....Raleigh
Dr. A. J. Crowell, 1930 and 1931.....Charlotte
Dr. M. L. Stevens, 1931 and 1932.....Asheville

Alternates

Dr. Joseph B. Greene, Asheville, for Dr. H. A. Royster.
Dr. L. W. Kornegay, Rocky Mount, for Dr. A. J. Crowell.
Dr. C. W. Banner, Greensboro, for Dr. M. L. Stevens.
Dr. M. L. Stevens, Asheville, for Dr. Chas. A. Woodard.

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA

Dr. W. D. Rogers.....Warrenton
Dr. W. C. Warren.....Williamston
Dr. C. B. Williams.....Elizabeth City
Dr. J. F. Nash.....St. Paul
Dr. G. E. Newby.....Hertford
Dr. B. C. Willis.....Rocky Mount
Dr. W. W. Sawyer.....Elizabeth City
Dr. John Martin.....Roanoke Rapids

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION

Dr. O. L. McFayden.....Fayetteville
Dr. L. LaBruce Ward.....Asheville
Dr. C. H. Pugh.....Gastonia
Dr. H. W. McKay.....Charlotte
Dr. S. Raymond Thompson.....Charlotte
Dr. Alonzo Myers.....Charlotte

DELEGATES TO UNITED STATES PHARMACOPOEIAL CONVENTION

Dr. R. O. Lyday.....Greensboro
Dr. W. C. Bostic, Jr.....Forest City
Dr. I. M. Proctor.....Raleigh

Alternates

Dr. L. C. Todd.....Charlotte
Dr. O. L. McFayden.....Fayetteville
Dr. Wm. B. Kinlaw.....Rocky Mount

DELEGATES TO NORTH CAROLINA DENTAL SOCIETY

Dr. R. W. Petrie.....Lenoir
Dr. Glenn R. Fry.....Hickory
Dr. J. W. Vernon.....Morganton
Dr. Jos. B. Greene.....Asheville
Dr. H. L. Sloane.....Charlotte
Dr. John R. McCracken.....Waynesville
Dr. L. N. Glenn.....Gastonia
Dr. T. C. Blackburn.....Hickory
Dr. J. W. Harbison.....Shelby
Dr. R. H. Crawford.....Rutherfordton
Dr. Walter V. Costner.....Lincolnton
Dr. Guy S. Kirby.....Marion
Dr. G. D. Bingham.....Sugar Grove
Dr. Wm. C. Bostic.....Forest City
Dr. Wm. Monroe Lyday.....Brevard
Dr. J. F. Abel.....Waynesville
Dr. J. J. Kirksey.....Morganton
Dr. R. E. Lee.....Lincolnton
Dr. John W. MacConnell.....Davidson

Dr. John Campbell.....Morganton
Dr. L. B. McBrayer.....Southern Pines
Dr. Moir S. Martin.....Mt. Airy
Dr. J. F. Miller.....Marion
Dr. W. R. Kirk.....Hendersonville
Dr. Chas. Z. Candler.....Sylva
Dr. F. Angel.....Franklin
Dr. Frank Roberts.....Marshall
Dr. F. H. Richardson.....Black Mountain
Dr. B. O. Edwards.....Asheville
Dr. M. L. Stevens.....Asheville
Dr. Frank Ford.....Valdese
Dr. H. C. Stillwell.....Maiden
Dr. Glenn Long.....Newton
Dr. Geo. Shipp.....Newton
Dr. R. H. Hardin.....Banner Elk
Dr. Fred C. Hubbard.....North Wilkesboro
Dr. J. F. Hunt.....Spindale
Dr. W. C. Johnson.....Canton
Dr. J. F. Jonas.....Marion
Dr. Edward M. Phifer.....Morganton
Dr. Chas. C. Orr.....Asheville
Dr. C. S. Norburn.....Asheville
Dr. T. C. Bost.....Charlotte
Dr. F. W. Griffith.....Asheville
Dr. M. A. Griffin.....Asheville

DELEGATES FROM NORTH CAROLINA DENTAL SOCIETY

Dr. J. S. Betts.....Greensboro
Dr. W. F. Clayton.....High Point
Dr. L. G. Coble.....Greensboro
Dr. L. M. Daniels.....Southern Pines
Dr. L. M. Edwards.....Durham
Dr. H. A. Edwards.....Greensboro
Dr. H. K. Foster.....Greensboro
Dr. J. S. Frost.....Greensboro
Dr. James D. Gregg.....Liberty
Dr. J. H. Hurdle.....Mebane
Dr. Jack Hughes.....Roxboro
Dr. Dennis Keel.....Greensboro
Dr. E. M. Medlin.....Aberdeen
Dr. H. V. Murray.....Burlington
Dr. Carl P. Norris.....Durham
Dr. C. C. Poindexter.....Greensboro
Dr. O. L. Presnell.....Asheboro
Dr. A. P. Reade.....Durham
Dr. J. B. Richardson.....High Point
Dr. E. E. Richardson.....Leaksville
Dr. Neal Sheffield.....Greensboro
Dr. H. A. Smathers.....Greensboro

Dr. J. S. Spurgeon.....Hillsboro
Dr. J. H. Wheeler.....Greensboro
Dr. E. McConnell.....Gastonia
Dr. B. Y. Adams.....Raleigh
Dr. Clarence D. Bain.....Dunn
Dr. A. D. Barber.....Sanford
Dr. Victor E. Bell.....Raleigh
Dr. S. L. Bobbit, Jr.....Raleigh
Dr. E. H. Broughton.....Raleigh
Dr. E. A. Branch.....Raleigh
Dr. J. K. Bryan.....Oxford
Dr. C. H. Bryan.....Apex
Dr. J. R. Butler.....Dunn
Dr. A. S. Cromartie.....Fayetteville
Dr. Arthur Fleming.....Louisburg
Dr. J. Martin Fleming.....Raleigh
Dr. G. Fred Hale.....Raleigh
Dr. E. B. Howle.....Raleigh
Dr. S. Robt. Horton.....Raleigh
Dr. E. W. Hunter.....Sanford
Dr. Wilbert Jackson.....Clinton
Dr. J. H. Judd.....Fayetteville
Dr. J. N. Johnson.....Goldsboro
Dr. H. O. Lineberger.....Raleigh
Dr. W. T. Martin.....Benson
Dr. Wallace F. Mustian.....Norlina
Dr. R. M. Olive.....Fayetteville
Dr. L. V. Henderson.....Pinehurst
Dr. P. E. Jones.....Farmville
Dr. C. E. Minges.....Rocky Mount

COMMITTEES

Medical Society Foundation

Dr. J. P. Matheson, *Chairman,* 3 years.....Charlotte
Dr. M. L. Stevens, 2 years.....Asheville
Dr. L. B. McBrayer, 1 year.....Southern Pines
Dr. J. B. Sidbury, 4 years.....Wilmington
Dr. J. M. Parrott, 5 years.....Kinston

Obituaries

Dr. C. M. Van Poole, *Chairman*.....Salisbury
Dr. C. A. Julian.....Greensboro
Dr. McT. G. Anders.....Gastonia

Memorial for the North Carolina Physicians Who Died in the World War

Dr. J. P. Munroe, *Chairman*.....Charlotte
Dr. A. J. Crowell.....Charlotte
Dr. L. B. McBrayer.....Southern Pines

Dr. J. M. Parrott.....Kinston
Dr. John T. Burrus.....High Point
Dr. Wilburt C. Davison.....Durham

Public Health Administration

Pres. State Board of Health, *ex-officio*....Dr. A. J. Crowell, Chm., Charlotte
Pres. State Board of Medical Examiners, *ex-officio*
Dr. Paul H. Ringer, Asheville
Pres. North Carolina Hospital Asso., *ex-officio*..Dr. D. A. Garrison, Gastonia

Legislation

Dr. B. J. Lawrence, *Chairman*.....Raleigh
Dr. T. W. M. Long.....Roanoke Rapids
Dr. Thurman D. Kitchin.....Wake Forest

Moore County Medical Society Medal

Dr. W. C. Mudgett, *Chairman*.....Southern Pines
Dr. J. M. Parrott.....Kinston
Dr. John Q. Myers.....Charlotte

Committee to Confer With Like Committee from the North Carolina Dental Society

Dr. J. M. Parrott, *Chairman*.....Kinston
Dr. J. T. Burrus.....High Point
Dr. J. G. Murphy.....Wilmington

Committee to Confer With Like Committee from State Nurses Association on Curriculum to be Used in Training Office Nurses

Dr. Karl B. Pace.....Greenville
Dr. O. L. McFayden.....Fayetteville

Printing and Supplies

Dr. L. B. McBrayer, *ex-officio*.....Southern Pines
Dr. P. P. McCain.....Sanatorium
Dr. J. W. Dickie.....Southern Pines

Committee on Hospitals

Dr. J. F. Highsmith.....Fayetteville
Dr. Henry F. Long.....Statesville
Dr. J. T. Burrus.....High Point
Dr. John Q. Myers.....Charlotte

Board of Medical Examiners of the State of North Carolina

President—Dr. Paul H. Ringer.....Asheville
Secretary-Treasurer—Dr. John W. MacConnell.....Davidson
Dr. Foy Roberson.....Durham
Dr. Thomas W. M. Long.....Roanoke Rapids
Dr. J. K. Pepper.....Winston-Salem
Dr. W. Houston Moore.....Wilmington
Dr. David T. Tayloe, Jr.....Washington

State Board of Examiners for Nurses

President—Miss Lula West, R.N.....Mount Airy
Secretary-Treasurer—Mrs. Dorothy Conyers, R.N.....Greensboro
Miss Bessie Chapman, R.N.....Greensboro
Dr. R. W. Petrie (from Hospital Association).....Lenoir
Dr. Frank A. Sharpe (from Medical Society) 1931.....Greensboro

Committee to Confer With Like Committee from State Hospital Association in Regard to Collection of Hospital Bills and Professional Fees in Other States

Dr. R. B. Davis, *Chairman*.....Greensboro
Dr. Ernest S. Bullock.....Wilmington
Dr. William Spicer.....Goldsboro

Arrangements

Dr. Lyle S. Booker, *Chairman*.....Durham
Place of Meeting.....Durham
Date.....April 20, 21 and 22, 1931
Headquarters.....Washington Duke Hotel

TRANSACTIONS

OF THE

SEVENTY-SEVENTH ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

PINEHURST, APRIL 28, 29, 30, 1930

MINUTES OF HOUSE OF DELEGATES

MONDAY, APRIL 28, 1930

The House of Delegates met in the ball room of the Hotel Carolina at 8:00 p.m. and was called to order by the President, Dr. L. A. Crowell.

The Secretary called the roll, and the following members were present:

ROLL CALL

County	*Delegate*
Alamance-Caswell	C. W. McPherson
Anson	
Ashe	
Avery	
Beaufort	D. T. Tayloe, Jr.
Bertie	L. B. Evans
Bladen	D. D. Clark
Brunswick	
Buncombe	J. B. Greene, J. L. Ward, C. C. Orr, C. H. Cocke, P. H. Ringer
Burke	E. H. E. Taylor
Cabarrus	P. R. MacFayden
Caldwell	J. D. Rudisill
Carteret	Ben F. Royal (or K. P. B. Bonner?)
Catawba	
Chatham	
Cherokee	N. B. Adams
Chowan-Perquimans	
Cleveland	J. W. Harbison
Columbus	R. B. Whitaker
Craven	D. E. Ford
Cumberland	O. L. McFayden
Currituck	
Davidson	

County	*Delegate*
Davie	
Duplin	J. D. Robinson
Durham-Orange	L. S. Booker, W. C. Davison, W. M. Coppridge
Edgecombe	
Forsyth	J. F. Belton
Franklin	
Gaston	McT. G. Anders
Gates	
Granville	N. C. Daniel
Greene	W. B. Murphy
Guilford	C. W. Banner, C. A. Julian, C. C. Hudson, D. A. Stanton, F. R. Taylor
Halifax	T. W. M. Long
Harnett	W. P. Holt, Sr.
Haywood	J. R. McCracken
Henderson	
Hertford	
Hoke	P. P. McCain
Iredell-Alexander	M. R. Adams, W. A. Trivette
Jackson	
Johnston	H. H. Utley
Jones	
Lee	Lynn McIver
Lenoir	Jas. M. Parrott
Lincoln	A. M. Cornwell
McDowell	
Macon-Clay	
Madison	
Martin	Wm. E. Warren
Mecklenburg	Jas. M. Northington, John Q. Myers, L. C. Todd, S. R. Thompson, Wm. Allan
Mitchell	
Montgomery	
Moore	A. H. McLeod
Nash	L. W. Kornegay
New Hanover	J. F. Robertson, J. H. Hamilton
Northampton	L. E. McDaniel
Onslow	Cyrus Thompson
Pamlico	O. C. Daniels
Pasquotank-Camden-Dare	C. B. Williams
Pender	
Person	A. F. Nichols
Pitt	W. I. Wooten
Polk	
Randolph	
Richmond	A. B. McCreary or W. D. James
Robeson	A. B. Holmes
Rockingham	
Rowan	C. W. Woodson

Rutherford.....John C. Twitty
Sampson.....J. S. Brewer
Scotland.....J. S. Gibson
Stanly.....J. Clegg Hall
Stokes .....
Surry.....Moir S. Martin
Swain .....
Transylvania .....
Union .....
Vance.....H. A. Newell
Wake.....C. C. Carpenter, John B. Wright, Benj. J. Lawrence, V. S. Caviness
Warren.....G. H. Macon
Washington-Tyrrell .....
Wayne.....J. H. Smith, T. B. Henderson
Watauga .....
Wilkes.....Fred C. Hubbard
Wilson.....George W. Mitchell
Yadkin .....
Yancey .....

President Crowell read the President's annual message to the House of Delegates, as follows:

The first meeting of my cabinet, which includes the President, Vice-Presidents, Secretary, and ten Councilors, was called to meet on June 3, 1929, in Raleigh.

After we arrived in Raleigh, and before the time for the meeting, Mr. N. A. Townsend, Counsel for the Governor, asked that my cabinet have a joint meeting with the Industrial Commission to discuss in detail the Workmen's Compensation Act. This was done in order to forestall any of the difficulties that other states were having in the working of the Compensation Act, by not having a thorough understanding with the medical profession.

At this meeting, the following members were present: Pres. L. A. Crowell; Sec. L. B. McBrayer; Dr. G. G. Dixon, Coun. of 2nd Dist.; Dr. J. B. Cranmer, Coun. of 3rd Dist.; Dr. W. H. Smith, Coun. of 4th Dist.; Dr. E. A. Livingston, Coun. of 5th Dist.; Dr. V. M. Hicks, Coun. of 6th Dist.; Dr. T. C. Bost, Coun. of 7th Dist.; Dr. R. B. Davis, Coun. of 8th Dist.; Dr. M. R. Adams, Coun. of 9th Dist.; Dr. J. F. Abel, Coun. of 10th Dist.

Judge Townsend and Mr. Allen both explained the Compensation Act and stressed the necessity for coöperation between the medical profession and the Commission in order that the law might become popular, also in order that the Commission might set a fair fee upon all work done by the doctors.

It was brought out in the discussion that the Commission had the power to render the final decision as to compensation, both to the injured party and the attending physician. Both gentlemen emphasized the fact that the members of the Commission not being doctors themselves did not feel capable of changing any doctors' fees, even though they might consider them out of reason, unless the physicians of the state would

furnish them a list of the usual fees charged throughout the state, which list would be used not as the letter of the law but the spirit of it. They made it very plain that it was not their purpose to request a list from the medical profession and use this without allowing considerable latitude in the matter of fees.

The Chairman, Mr. Allen, requested that the President of the North Carolina State Medical Society appoint a Committee from the medical profession of the state to confer with the Commission in regard to this matter and to prepare a fee list for their general information.

All of the doctors who discussed the matter expressed themselves as being highly pleased at the efforts of the Commission to adjust claims in a way that would be satisfactory to all physicians and all felt that the manner in which they had approached the profession would solve the question satisfactorily for both doctors and Commission.

At the instance of Chairman Matt Allen of the Industrial Commission, a second meeting of the President and his cabinet was called to meet on March 24, 1930, Raleigh, in the offices of the Industrial Commission, to again discuss in detail the practical workings of the Workmen's Compensation Act after it had been in operation for practically nine months. This was done with the idea of ironing out any misunderstandings which had occurred between the Industrial Commission and the medical profession of the state.

Several hours were spent in the discussion of the various phases of the Act, and I feel that much was accomplished to guarantee the smooth operation of the Act.

The Commission made it plain that they never question an account sent in by a physician if it is not greater than the suggested fees made by a committee authorized by the President and his staff and appointed by the President. If the amount was higher than these fees, they asked for an explanation or why it should be higher and when the explanation was given there was usually no further trouble.

Those present agreed that one of the finest things that the legislature had ever done was to pass the Compensation Act and guaranteeing to the physicians their fees in connection with same. That the fees arranged by the committee appointed by President Crowell were reasonable, just and right. That the relations of those present with the Industrial Commission were entirely satisfactory.

It was agreed by those present, including the Industrial Commission, that in their opinion the most of the friction that had resulted between individual members of the profession and the Commission was from a lack of understanding on the part of the individual physicians as to the law governing the Industrial Commission and their attitude toward the suggested schedule of fees and toward bills rendered for service by the individual physicians.

At the suggestion of one of the councilors, Dr. V. M. Hicks, it was agreed that each councilor would call a meeting of each County Medical Society in his District and secure the attendance of one member of the Industrial Commission in order that a thorough understanding of each other and the laws and rules governing the Commission and the fees of physicians should be thoroughly understood by both parties, and it was

believed that little if any friction would be had. Following that it was further agreed by all the members of the council present that this would be done between now and the State Medical Society meeting beginning April 28th.

President Crowell in accordance with the action of the officers and council of the State Medical Society above referred to, appointed the following committee to prepare a suggested Fee Bill:

The President *ex-officio* Chairman, Dr. R. B. Davis, Dr. T. C. Bost, Dr. J. B. Cranmer, Dr. J. F. Highsmith.

This committee had one or more meetings and reported the following suggested Fee Bill:

SCHEDULE OF MEDICAL AND SURGICAL FEES SUBMITTED TO THE NORTH CAROLINA INDUSTRIAL COMMISSION

(For Guidance Only)

Amputations	*Flat Rate, Full Treatment*
Thigh, at hip joint	$100.00 to $150.00
Thigh, between hip and knee	75.00 to 100.00
Leg, at knee joint	75.00
Leg, between ankle and knee	75.00
Foot, at ankle joint	75.00
Foot, between ankle joints and tarso-metatarsal joints	50.00
Foot, through metatarsal bones	50.00
Arm, at shoulder joint	85.00 to 100.00
Arm, at elbow joint	60.00
Arm, forearm at hand at wrist	60.00
Hand, between wrist joint and carpo-metacarpal joints	50.00
Hand, through metacarpal bones	50.00
Finger or toe at or proximal to distal phalangeal joint	25.00
Fingers or toes, two or more at or proximal to the last phalangeal joints	30.00
Finger or toe, distal to last phalangeal joint	15.00
Fingers or toes, two or more, distal to the last phalangeal joints	25.00

(All amputations are such that require suturing of stump.)

Fracture, Reduction of:	*Flat Rate, Full Treatment*
Upper arm	$ 35.00 to $ 50.00
Forearm, one bone (shaft)	35.00
Forearm, both bones (shaft)	35.00
Forearm, Colles	40.00
Femur	100.00
Lower leg, one bone	45.00
Lower leg, both bones or Potts	50.00
Jaw	50.00
Ribs, one or more, strapping	20.00
Patella	50.00
Pubic Bone	100.00
Acetabulum	100.00
Metatarsal or Metacarpal	25.00
Fingers, one or more	20.00
Toes, one or more	20.00

Coccyx	30.00
Sacrum	100.00
Sternum	35.00
Spine	100.00
La chrymal	25.00
Malar Bone	25.00
Scapula	50.00
Clavicle	35.00
Nasal Bones	25.00

Compound fracture 50% extra.

Operation for wiring of bones or plating 100% extra.

Dislocation, Reduction of:	*Flat Rate, Full Treatment*
Shoulder	$ 35.00
Elbow	25.00
Wrist	25.00
Hip	65.00
Knee	75.00
Patella	15.00
Ankle	40.00
Clavicle	30.00
Fingers (one or more)	15.00
Toes (one or more)	15.00
Jaw	15.00
Ribs (one or more)	20.00
Spine, with paralysis	125.00
Sternum	20.00
Coccyx	25.00
Metacarpal (one or more)	15.00
Metatarsal (one or more)	25.00
Carpal (one or more)	15.00
Tarsal (one or more)	25.00
Scapula	30.00
Pelvis	50.00

Special Operations:

Trephining of skull	$100.00
Fixation or suturing of kidney	125.00
Laparotomy for rupture or wound of bladder	100.00
Laparotomy for rupture or wound of liver	125.00
Laparotomy for rupture or wound of spleen	125.00
Laparotomy for rupture or wound of stomach	125.00
Laparotomy for circumscribed aneurism	100.00
Herniotomy	100.00
Trephining bone abscess	35.00
Caries or Necrosis, removal of	35.00
Tracheotomy	65.00
Intubation	35.00
Rupture of abdominal wall, repair of	50.00
Nerve, section or suturing of	25.00

Injection of tetanus antitoxin, prophylactic dose only	1.00
Anthrax, cauterization or excision	25.00
Injection Hydrophobia, full treatment (21 doses)	50.00
Transfusion of Blood, when donor is furnished by patient	35.00
Ligating important arteries	25.00
Ligating small arteries	15.00
Enucleation of eyeball	75.00
Sprains:	
First aid	$ 5.00
Subsequent treatments	2.00
House visits	3.00
Special Items:	
Minor operations, repair of small wound, suturing, dressing	$ 15.00
Repair of large wounds, extensive suturing and dressing	25.00
Abscess incision	10.00
Laminectomy (special O. R.)	125.00
Parancentesis, thoracic or pericidi (special operation)	15.00
Rupture of tendon, large, repair of	50.00
Rupture of tendon, small, repair of	35.00
General Items:	
Assisting at O. R., major	$ 10.00
Mileage beyond city limit, one way only (per mile)	1.00
Exam. in lunacy, written report, 1 day attendance in court	35.00
Subsequent court or commission, attendance per day	$25.00 to 50.00
Urinalysis	2.00
Complete phy. exam. and report by other than attending physician	10.00 to 25.00
Autopsy, complete with written report	50.00 to 75.00
Microscopical and chemical analysis of organs, per organ	5.00 to 10.00
Testimony in court	25.00
Testimony before Commission as to facts of injury	10.00
Testimony at coroner's inquest	10.00
Expert testimony, per day	25.00 to 50.00
X-Ray pictures (including film), trunk or head	10.00
Thigh or knee, single picture	5.00 to 10.00
Leg, arm, foot or hand, single picture	5.00
Anesthetics:	
Local, spinal, ether or gas	5.00 to 15.00
Ordinary Items:	
Ordinary day visits at house or hospital, including antiseptic dressing when necessary	3.00
Night visits, when necessary	5.00
Ordinary office treatment, including dressing	2.00
Removal of foreign body from eye	2.00 to 5.00

Dr. L. A. Crowell, Chairman,
Dr. J. F. Highsmith,
Dr. R. B. Davis, Sec'y.,
Dr. J. B. Cranmer,
Dr. T. C. Bost,
Committee.

Dr. A. B. Holmes moved that a committee of three be appointed to consider the President's message to the House of Delegates and the President's annual address (to be delivered at the opening session on Tuesday morning). This motion was seconded and carried.

The following committee was later appointed: Past Presidents, James M. Parrott, John Q. Myers, and Albert Anderson.

The Secretary-Treasurer, Dr. L. B. McBrayer, read his report, which on motion was adopted and referred to the Finance Committee.

ANNUAL REPORT OF THE SECRETARY-TREASURER

To the House of Delegates of the Medical Society of the State of North Carolina:

Your secretary has endeavored to discharge the duties enjoined upon him by the Constitution and By-Laws and to carry out requests made by the officers of the Society.

He has coöperated with and assisted the President in every way possible and has found much pleasure in all this.

Two meetings of the officers of this Society, including the councilors, and at the last meeting other distinguished fellows of this Society were present, and the matter of most concern at each of these meetings was the conference with the Industrial Commission.

At the first of these meetings the President appointed a committee composed of Dr. Cranmer, Dr. Davis and Dr. Bost of the council and Dr. J. F. Highsmith, the President being chairman ex-officio of the committee, to prepare a suggested schedule of fees that were considered only as a suggestion to the Commission and to the medical profession and not binding upon either, the same to be used by the profession and the Commission as thought best in determining the proper charges in compensation cases.

At the second meeting above referred to, the suggested schedule of fees was agreed to be perfectly satisfactory both upon the part of the Industrial Commission and all the members of the profession present. It was my understanding that the President will report on these meetings in his message to the House of Delegates and therefore nothing further is said about it here except two things:

(1) At the suggestion of the President the Secretary had mimeographed some 2,000 copies of this suggested Fee Bill and mailed one copy to each Fellow of the Medical Society of the State of North Carolina and has since sent out additional copies when asked for by Fellows of the Society but has refused to send them out to any physician who is not a Fellow of this Society.

(2) Our Constitution and By-Laws provide that the Councilors shall have actual travel expense attending meetings of the Council and doing their official work, except when attending the meeting of the Medical Society of the State of North Carolina. This has not been paid of late years except when it was requested by a Councilor on account of the shortness of our funds. There is no provision for travel expenses for any other

officer of this Society or for any committee, all of which is mentioned for such consideration as you may care to give it.

I do want to say, however, that in my opinion the work of the officers and council of this Society with the Industrial Commission has been of untold benefit to all parties concerned and in all probability has enabled the physicians of this state to secure better fees than otherwise would have been possible.

I want also to call attention to the fact that in our former Constitution and By-Laws there was really no provision for the holding of any such meeting and conference but with the new Constitution and By-Laws proposed by your committee, this and many other needed defects will be corrected, except that no changes have been made in the matter of travel expense.

I desire to call your attention again as I did last year to the fact that in the First District so far as my information goes, there is no attempt whatever to hold a County Society meeting, but in lieu thereof, four District Medical Society meetings are held each year and these District Society meetings are fairly well attended and are very valuable sessions. However, having no County Medical Society there appears to be little or no attempt at collecting dues in the counties, perhaps about all the effort made to collect dues is at the District meeting before the annual meeting. There is no objection to this of course, except that the County Medical Society has no officers and it is difficult, for example, for our Committee on Public Policy and Legislation to carry on their work when there is need of approaching the County Medical Society.

There is another combination of societies composed of certain societies in the Seventh and Ninth Districts, this group of societies functioning as one society for the purpose of scientific meetings and very much better work than could be done by the County Medical Society singly, but we have the same difficulty as in the First District. One of the county societies in this group finds itself now without a single Fellow in good standing although each Fellow was notified when the programs were sent out. These things, as you can readily see, are affecting our organization untowardly so far as everything goes outside of the scientific sessions.

It is well that I should call attention to the meetings once yearly of the Ninth District Medical Society. Dr. J. W. Davis of Statesville has been secretary for several years and he in connection with the councilor and other officers and the membership generally has built up an attendance that usually totals around 150 and puts on each year a wonderfully fine program for an afternoon and evening. Recently Dr. Davis issued a bulletin covering the doings of his District Society and other things of value to organized medicine, which is another step in the right direction. Having mentioned this, it becomes necessary to say that all the District Societies are functioning splendidly.

We attach hereto financial statement covering the year, with proper certificate from the Page Trust Company showing balance on hand and the detailed financial transactions of the office during the year.

I want to call your attention to the fact that notwithstanding every effort was put forth that the secretary could conceive of, our membership when the TRANSACTIONS went to press last year was 1669 against 1738 the previous year. I also call your attention to the fact that at the time of writing this report we had 1571 Fellows in good standing, a little less than 100 shy of the actual number we had when we went to press with the TRANSACTIONS last year. Efforts will be continued to secure the dues of others and we feel that we will at least reach the number we had last year and possibly go above it. In the well functioning societies the secretary makes very earnest effort to collect the dues and succeeds admirably, while in many of the smaller societies, including those mentioned heretofore, there is little effort made locally to collect the dues and it must all be handled through the secretary's office.

It is well, too, for me to call to your attention the fact that when the books were closed in 1929 we had on hand a balance of $4,477.77 while this year we have a balance of $4,376.79, which shows nearly $100.00 less than the previous year.

I cannot refrain from calling the attention of the House of Delegates and the profession to the fact that the medical profession in general has come into a great deal of criticism during the last year on account of its lack of organization to take care of the needs thought to be necessary to handle the treatment of the sick and the prevention of disease as it occurs today. These criticisms are of course coming largely from lay people, so-called philanthropists. I feel that it is absolutely necessary for the medical profession to inform themselves on these lines and be ready to meet any criticisms offered and also to render the service to the people that is needed and demanded by them and which can be furnished in no other way except by the medical profession and this latter fact increases our responsibility in connection therewith. The President and perhaps other speakers will possibly refer to this thing during our meeting and so I refrain from discussing the matter further.

Respectfully submitted,

L. B. MCBRAYER,
Secretary-Treasurer.

FINANCIAL STATEMENT

APRIL 13TH, 1929—APRIL 25TH, 1930

RECEIPTS

Balance April 13, 1929	$ 877.91	
Dues collected	4,672.00	
Interest on certificates of deposit	64.89	
Miscellaneous items sent A. M. A.	7.00	
Sale of Transactions	5.00	
Transferred from Savings	3,000.00	
Total Receipts		$8,626.80

DISBURSEMENTS

Check No. 547	D. G. Stutz, express programs	$ .90
" " 548	Helen B. Eisenberger, expenses registrar	11.95
" " 549	Western Union, March messages	5.55
" " 550	Hursey & Company, President's jewel	13.00
" " 551	Dr. L. B. McBrayer, postage	4.96
" " 552	Western Union, April messages	9.19
" " 553	Evelyn Thomas, clerical work on TRANSACTIONS	18.60
" " 554	Miss Mary Robinson, reporting Greensboro	58.85
" " 555	Christian Prtg. Co., envelopes for programs	16.69
" " 556	Master Reporting Co., reporting Greensboro	276.91
" " 557	Myrtle McCaskell, clerical work on TRANSACTIONS	23.75
" " 558	Evelyn Thomas, work on TRANSACTIONS	5.00
" " 559	Elizabeth P. Suggs, clerical work	13.50
" " 560	Dr. L. B. McBrayer, salary May, June, July, August	200.00
" " 561	Miss Mary Robinson, transcribing	102.21
" " 562	Councilors' meeting, Sir Walter Hotel	9.75
" " 563	Western Union, May messages	11.31
" " 564	D. G. Stutz, express	1.38
" " 565	Dr. W. I. Pitts, refund dues overpaid	1.00
" " 566	Brown-Morrison Company, stationery	88.31
" " 567	North Carolina Tuberculosis Ass'n., postage	744
" " 568	D. G. Stutz, express stationery	2.19
" " 569	Postal Telegraph, June service	.97
" " 570	Central Carolina Telephone Co., June service	.95
" " 571	Christian Prtg. Co., reprints Constitution and By-Laws	10.20
" " 572	Christian Prtg. Co., first payment TRANSACTIONS	1,000.00
" " 573	Western Union, June service	5.88
" " 574	Dr. L. B. McBrayer, postage, fee bill	66.76
" " 575	North Carolina Tuberculosis Ass'n., materials	16.43
" " 576	North Carolina Tuberculosis Ass'n., steno. work TRANSACTIONS	337.50
" " 577	Helen B. Eisenberger, extra steno. work	25.00
" " 578	Evelyn Thomas, clerical work	2.68
" " 579	Christian Prtg. Co., wrapping, postage & mailing TRANSACTIONS	222.90
" " 580	Christian Prtg. Co., balance on TRANSACTIONS	1,246.79

Receipts brought forward		$8,626.80
Disbursements brought forward	$3,818.50	
Check No. 581	Dr. T. C. Bost, expenses councilors' meeting	16.50
" " 582	Dr. John B. Cranmer, expenses councilors' meeting	15.00
" " 583	Dr. L. B. McBrayer, salary Sept., Oct., Nov., Dec.	200.00

"	"	584—D. G. Stutz, express TRANSACTIONS	.81
"	"	585—Christian Prtg. Co., indexing TRANSACTIONS	50.00
"	"	586—Dr. L. B. McBrayer, postage TRANSACTIONS returned	3.60
"	"	587—Western Union, October messages	2.51
"	"	588—Void	
"	"	589—Dr. L. B. McBrayer, postage	1.82
"	"	590—City Telephone Company, tolls, June, 1927-May 1929	9.84
"	"	591—D. G. Stutz, express cuts from TRANSACTIONS	.62
"	"	592—Central Carolina Telephone Co., December tolls	1.60
"	"	593—The Sandhill Citizen, membership cards	12.50
"	"	594—Central Carolina Telephone Co., January tolls	.70
"	"	595—Helen B. Eisenberger., Jan. steno. work	135.00
"	"	596—Dr. L. B. McBrayer, salary Jan., Feb., March, April	200.00
"	"	597—Western Union, January service	3.35
"	"	598—Dr. L. B. McBrayer, postage	4.88
"	"	599—Dr. L. B. McBrayer, postage	5.04
"	"	600—Commercial Prtg. Co., adding pages to Treas. book	38.79
"	"	601—Central Carolina Telephone Co., Feb. tolls	1.40
"	"	602—Dr. R. B. McKnight, refund Dr. Collins' dues	3.00
"	"	603—Mrs. Verna E. Hamilton, steno. services	7.80
"	"	604—Helen B. Eisenberger, Feb. steno. work	135.00
"	"	605—Dr. L. B. McBrayer, postage	8.00
"	"	606—Western Union, March messages	1.80
"	"	607—Dr. R. B. Davis, expenses Raleigh meeting	6.80
"	"	608—Mrs. Verna E. Hamilton, steno. services	11.30
"	"	609—Dr. L. B. McBrayer, postage	7.96
"	"	610—D. G. Stutz, express programs	2.51
"	"	611—Dr. L. B. McBrayer, postage	25.56
"	"	612—Dr. L. B. McBrayer, postage	1.60
"	"	613—Sandhill Citizen, envelopes for programs	13.60
"	"	614—Stuart Cameron, mailing programs	1.93
"	"	615—Morris Eadie, mailing programs	3.29
"	"	616—Dr. G. E. Newby, refund dues overpaid	1.00
"	"	617—Mrs. Verna Hamilton, steno. services	4.30
"	"	618—Void	
"	"	619—Page Trust Co., certificates of deposit	3,000.00
		Total Disbursements	$7,757.91
		Cash Book Balance	868.89

Checks outstanding:

No. 197....	$1.00
No. 351....	3.00
No. 447....	1.50
No. 601....	1.40
No. 616....	1.00
Total	7.90
Bank Balance	$ 876.79

Aberdeen, N. C., April 26, 1930.

Medical Society of the State of N. C.,
Southern Pines, N. C.

Gentlemen:

This is to certify that the funds on deposit with us to the credit of the Medical Society are as follows: Certificates of Deposit dated April 25, 1930, Nos. 1657, 1658 and 1659 for $500.00, $2000.00 and $1000.00, respectively, bearing interest at four per cent, and a credit balance of $876.79 on the checking account.

Very truly yours,
D. I. McKeithen, *Sec.-Treas.*

Drs. J. R. McCracken and James M. Parrott were later appointed to serve as the Finance Committee.

Dr. Jas. M. Northington, speaking as a delegate from the Mecklenburg County Medical Society, stated that, because the first meeting of the House of Delegates is held on the evening prior to the opening session of the Society, a large number of county societies are not represented. Dr. Northington moved that hereafter the first meeting of the House of Delegates be held on the evening of the day on which is held the first morning session. The Secretary-Treasurer stated that a majority of the county societies are represented at this (the present) meeting of the House of Delegates. Dr. Cyrus Thompson moved to table the motion, and the motion to table was carried.

Dr. K. P. B. Bonner moved that the House of Delegates send a telegram of sympathy and condolence to Dr. J. W. MacConnell, of Davidson, who is ill in a Washington hospital. An amendment was offered to provide that a telegram be sent to Dr. J. P. Monroe, of Sanford. Dr. Chas. O'H. Laughinghouse offered an amendment to include that a message of sympathy be sent to the family of Dr. R. J. Noble, of Selma, recently deceased. Dr. J. P. Munroe offered a substitute motion providing that a committee be appointed to draw up resolutions of sympathy and to send the messages suggested. The substitute motion was adopted, and the following committee was appointed: Drs. John Q. Myers, L. E. McDaniel, and J. P. Munroe.

Telegrams were later sent to Dr. J. W. MacConnell and Dr. J. P. Monroe, and the committee requested the Committee on Obituaries to take official cognizance of the death of Dr. R. J. Noble.

REPORT OF COMMITTEE ON REVISION OF CONSTITUTION AND BY-LAWS

Dr. M. L. Stevens, chairman, presented for final adoption a supplementary report by the Committee, the original report presented last year having been printed and a copy sent to each County Society, as required. Dr. K. P. B. Bonner moved that the report and supplementary report be accepted and adopted as the organic law of the Society. This motion was duly seconded and was carried.

CONSTITUTION AND BY-LAWS

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

APPROVED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AT THE ANNUAL SESSION IN HOT SPRINGS, NORTH CAROLINA, JUNE 2, 1903

REVISED AT THE SEVENTY-SECOND ANNUAL SESSION, PINEHURST, APRIL 28, 1925

REVISED AT THE SEVENTY-SEVENTH ANNUAL SESSION, PINEHURST, APRIL 28, 1930

MEMORANDA

At the forty-ninth annual session of the Medical Society of the State of North Carolina in Wilmington, N. C., in 1902, the address of the President, Dr. Robert S. Young, contained the following:

"At the St. Paul (1901) meeting of the American Medical Association, a new Constitution and By-Laws were adopted. The American Medical Association earnestly requests the coöperation of our Society in its organization. The officers of that Association asked me to bring the matter before you. I herewith transmit the correspondence, and beg you to authorize a special committee to consider this subject, and report during this meeting."

Page 33, Transactions of the same session, contains the following:

"The committee on the President's message reported in favor of the suggestions made; * * * they recommend that a committee be appointed to draft a constitution along the lines laid down by the American Medical Association, and to report to the next meeting of the Society.

"The President appointed the following committee on a new constitution: Drs. J. Howell Way, M. H. Fletcher, H. A. Royster, J. A. Burroughs, Geo. W. Pressly."

In accordance with the instructions therein contained, the committee carefully considered the matter, and after a most critical study of the whole subject, submitted the Constitution and By-Laws, as printed in the 1903 Transactions, for the action of the Society.

At the fifty-first annual session in Hot Springs, N. C., beginning June 3, 1903, Dr. A. W. Knox, President, the report of the committee was accepted and made the subject of a full and free discussion extending over a portion of two days, when the Society unanimously accepted the Constitution and By-Laws as reported by the committee, and contained in the 1903 Transactions, pages 547-563.

At the seventy-second annual session in Pinehurst, N. C., April 28 and 29, 1925, a committee composed of Drs. C. M. Van Poole, C. W. Banner, and D. A. Garrison reported on certain recommendations, which were approved and are incorporated, with all other amendments heretofore passed, in the printed copy hereafter following.

At the seventy-fifth annual session at Pinehurst, April 30 and May 1 and 2, 1928, a committee was appointed to revise the Constitution and By-Laws, consisting of Dr. Martin L. Stevens, Dr. J. M. Parrott and Dr. L. B. McBrayer. They reported to the seventy-sixth annual session which met at Greensboro, April 15, 16 and 17, 1929. This report according to the laws made and provided for amending the Constitution laid over until the next annual session. At the seventy-seventh annual session, April 28 to 30, 1930, at Pinehurst, the report of the committee was brought up as unfinished business and was unanimously adopted and appears in the following pages.

CONSTITUTION AND BY-LAWS

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

APPROVED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AT THE FIFTIETH ANNUAL SESSION IN HOT SPRINGS, NORTH CAROLINA, JUNE 2, 1903

REVISED AT THE SEVENTY-SECOND ANNUAL SESSION, PINEHURST, APRIL 28, 1925

REVISED AT THE SEVENTY-SEVENTH ANNUAL SESSION, PINEHURST, APRIL 28, 1930

ARTICLE I.—Title of the Society

The name and title of this organization shall be "The Medical Society of the State of North Carolina."

ARTICLE II.—Purposes of the Society

The purpose of this Society shall be to federate and bring into one compact organization the entire medical profession of the State of North Carolina, and to unite with similar organizations in other states to form the American Medical Association; with a view to the extension of medical knowledge, and to the advancement of medical science; to the elevation of the standard of medical education, and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians, and to the guarding and fostering of their material interests; and to the enlightenment and direction of public opinion in regard to the great problems of state medicine and public health, so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease, and in prolonging and adding comfort to life.

ARTICLE III.—Component Societies

Component societies shall consist of those county medical societies which shall hold charters from this State Society.

ARTICLE IV.—Composition of the Society

Section 1. This Society shall consist of Officers, Fellows, Delegates, Guests, Honorary Members, and Honorary Fellows.

Sec. 2. Fellows.—The Fellows of this Society shall be the members of the component county medical societies, and those who are not members of any County Society who are recommended by the Board of Councilors.

Sec. 3. Delegates.—Delegates shall be those Fellows who are elected in accordance with this Constitution and By-Laws to represent their respective component county societies in the House of Delegates of this Society.

Sec. 4. Guests.—Any distinguished physician not a resident of this State may become a guest during any annual session upon invitation of the Society, and shall be accorded the privilege of participating in all of the scientific work for that meeting.

Sec. 5. The Honorary Members shall consist of such regular physicians as have won distinction by their contributions to medical science; those elderly physicians who, prior to their retirement from practice, have displayed a proper interest in the welfare of this Society, or who, by their example, have reflected credit and honor upon the profession. They must be nominated by the Council and receive a two-thirds vote of the members of the House of Delegates present at the meeting at which their names are presented for election. They shall be exempt from all dues and fines, and shall be entitled to all the privileges of the Society, except the right to vote and hold office.

Sec. 6. The Honorary Fellows shall consist of such physicians as have been Fellows of this Society continuously for thirty years, and whose dues have been paid during that time. They shall be exempt from all dues and fines, and shall be entitled to all the privileges enjoyed by active Fellows in good standing.

ARTICLE V.—House of Delegates

The House of Delegates shall be the legislative and business body of the Society, and shall consist of (1) delegates elected by the component county societies, and (2) ex-officio the Past Presidents and Past Secretaries and the officers of the Society as defined in this Constitution.

ARTICLE VI.—Sections and District Societies

The House of Delegates may provide for a division of the scientific work of the Society into appropriate sections, and for the organization of such councilor district societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component county societies.

ARTICLE VII.—Meetings and Sessions

Section 1. The Society shall hold an annual meeting, during which there shall be held daily not less than one general session, which shall be open to all registered Fellows.

Sec. 2. The time and place for holding each annual meeting shall be fixed by the House of Delegates, but in case a change of time or place or both should be considered necessary, the executive committee shall have authority in the premises.

ARTICLE VIII.—Officers

Section 1. The officers of this Society shall be a President, President-elect, two Vice-Presidents, a Secretary-Treasurer and ten Councilors. The foregoing shall constitute the Executive Committee.

Sec. 2. The President, President-elect and Vice-Presidents shall be elected for a term of one year. The Secretary-Treasurer and Councilors shall be elected for terms of three years each. All of these officers shall serve until their successors are elected and installed.

Sec. 3. The officers of this Society shall be elected by ballot, a majority of the votes cast being necessary to elect, by the House of Delegates on the second day of the annual session, however, when the nominating committee presents its recommendations for officers with only one name for each office and there are no other nominations, the vote may be taken viva voce. No Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon the annual meeting and who has not been a member of the Society for the past three years. Any nominee for the office of President or President-elect shall have been an active member of the Society for five years, including the year of his election, shall have attended two of the three meetings immediately preceding his nomination, including the meeting at which he is nominated, and shall be a Fellow in good standing at the time of his nomination.

ARTICLE IX.—The Board of Medical Examiners, The State Board of Health, and The State Board of Examiners for Nurses

Section 1. The seven members of the "Board of Medical Examiners of the State of North Carolina" shall be elected by ballot in general session for a term of six years, a majority of the votes cast being necessary to a choice. The election shall be held on the second day of the annual meeting, and the balloting shall continue until the entire number is elected.

Sec. 2. A vacancy occurring from any cause other than expiration of term of office shall be filled by the Board or a quorum thereof.

Sec. 3. The elective members of the State Board of Health, and of the State Board of Examiners for Nurses, shall be elected by ballot on the second day of the annual meeting, in general session.

ARTICLE X.—Funds and Expenses

Funds for meeting the expenses of the Society shall be arranged for by the House of Delegates by an equal per capita assessment upon each county society, to be fixed by the House of Delegates, by voluntary contribution, and from the profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual meeting, for publication, and for such other purposes as will promote the welfare of the Society, the profession, and the people of the State.

ARTICLE XI.—Referendum

The general session of the Society may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates, and the House of Delegates may, by a similar vote of its own members, or after a like vote of the general session, submit any such question to the membership of the Society for a final vote; and if the persons voting shall comprise a majority of all the members of the Society; a majority of such votes shall determine the question, and be binding upon the House of Delegates. The House of Delegates may refer a matter to the general session, in which case a majority of such votes present and voting shall determine the question.

ARTICLE XII.—The Seal

The Society shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE XIII.—Amendments

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates registered at that annual meeting, provided that such amendment shall have been presented in open meeting at the previous annual meeting, and that it shall have been sent officially to each component county society at least two months before the session at which final action is to be taken.

BY-LAWS

CHAPTER I.—Fellowship

Section 1. All members of the component county medical societies and all Fellows of this Society who have been made Fellows by the Council, and have paid their annual dues for the current year, shall be privileged to attend all sessions and take part in all the proceedings of the annual meeting, and shall be eligible to any office within the gift of the Society.

Sec. 2. The name of a physician upon the properly certified roster of Fellows of this Society, as reported by the component medical society, or the name of a physician enrolled on the record of the Secretary of this Society after having been admitted by the Council, and whose annual assessments have been paid for the current year, shall be prima facie evidence of his right to register.

Sec. 3. No person who is under sentence of suspension or expulsion from this Society or from any component society of this Society, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Society, nor shall he be permitted to take any part in any of its proceedings until such time as he has been relieved of such disability. Provided, however, that the Honorary Fellows of this Society shall continue as such notwithstanding they are dropped from the roll of the component Society for failure to pay dues.

Sec. 4. Each member in attendance at the annual meeting shall enter his name on the registration book. When his right to fellowship has been verified by reference to the record of the Secretary of this Society, he shall receive a badge, which shall be evidence of his right to all the privileges of fellowship at that meeting. No Fellow or delegate shall take part in any of the proceedings of an annual meeting who has not complied with the provisions of this section.

CHAPTER II.—Annual and Special Meetings of the Society

Section 1. The Society shall hold an annual meeting at such time and place as has been fixed at the preceding annual meeting, but in case a change of time or place or both should be considered necessary, the executive committee shall have authority in the premises.

Sec. 2. Special sessions of either the Society or House of Delegates shall be called by the President at his discretion, or upon petition of twenty delegates, or upon request of the council or executive committee.

CHAPTER III.—General Sessions

Section 1. The general sessions shall include all registered Fellows, delegates, members, and guests, who shall have equal rights to participate in the proceedings and discussions; and, except guests and honorary members, to vote on pending questions. Each general session shall be presided over by the President, or in his absence or disability, or by his request, by one of the Vice-Presidents. Before it,

at such time and place as may have been arranged, shall be delivered the annual address of the President, and the entire time of the session, so far as may be, shall be devoted to papers and discussions relating to scientific medicine.

Sec. 2. The general session, the House of Delegates and ad interim the executive committee, shall have authority to create committees or commissions for scientific investigations and for other purposes of special interest and importance to the profession and public, and to receive and dispose of reports of the same; but any expense in connection therewith must first be approved by the House of Delegates, or by the Executive Committee.

Sec. 3. Except by special vote, the order of exercises, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed.

Sec. 4. No address or paper before the Society, except that of the President, shall occupy more than fifteen minutes in its delivery; and no Fellow shall speak longer than five minutes, nor more than once on any one subject except by unanimous consent: Provided, that the terms of this section shall not apply to invited guests.

Sec. 5. All papers read before the Society shall be its property. Each paper shall be deposited with the Secretary-Treasurer when read, and if this is not done it shall not be published.

CHAPTER IV.—House of Delegates

Section 1. The House of Delegates shall meet annually at the time and place of the annual meeting of the Society, and shall so fix hours of meeting as not to conflict with the first general session of the Society, or with the session held for the address of the President, and so as to give delegates an opportunity to attend the other scientific proceedings and discussions so far as is consistent with their duties. The first session of the House of Delegates shall be held at 8 p. m. the day preceding the meeting of the Society, at which session as much as is possible of the business of the House shall be transacted.

Sec. 2. Each and every component Medical Society that has been chartered by this Society, and is free from indebtedness to this Society and is otherwise in good standing as a component Medical Society, shall be entitled to one delegate to the House of Delegates for the first twenty-five members or less, and an additional delegate for every additional twenty-five members or any additional major fraction of twenty-five members.

Sec. 3. A majority of the registered delegates shall constitute a quorum, and all of the sessions of the House of Delegates shall be open to Fellows of the Society.

Sec. 4. It shall, through its officers, Council, Executive Committee, and otherwise, give diligent attention to and foster the scientific work and spirit of the Society, and shall constantly study and strive to make each annual session a stepping-stone to future ones of higher interest.

Sec. 5. It shall consider and advise as to the material interests of the profession, and of the public in those important matters wherein it is dependent upon the profession, and shall use its influence to secure and enforce all proper medical and public health legislation, and to diffuse popular information in relation thereto.

Sec. 6. It shall make careful inquiry into the condition of the profession of

each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall especially and systematically endeavor to promote friendly intercourse between physicians of the same locality, and shall continue these efforts until every physician in every county of the State who can be made reputable has been brought under medical society influences.

Sec. 7. It shall encourage post-graduate work in medical centers, as well as home study and research, and shall endeavor to have the results of the same utilized and intelligently discussed in the county societies, and in this Society.

Sec. 8. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body, in such a manner that not more than one-half of the delegates shall be elected in any one year.

Sec. 9. It shall, upon application, provide and issue charters to county societies organized to conform to the letter and spirit of this Constitution and By-Laws.

Sec. 10. In sparsely settled sections, it shall have authority to organize the physicians of two or more counties into societies, to be designated by hyphenating the names of two or more counties, so as to distinguish them from district and other classes of societies, and these societies, when organized and chartered, shall be entitled to all the privileges and representation provided herein for county societies, until such counties may be organized separately.

Sec. 11. It shall have authority through its Council, by majority vote of the Council, a quorum being present, to elect any physician who applies directly to said Council for fellowship; but not unless he has been definitely refused admittance to a local society and the case has been appealed to the Council and only then after the Council has given his case a hearing and is convinced that he has been unjustly kept out of the local society and that it is impossible to reconcile the local society to admitting him and the Council shall certify such election to the Secretary. A member so elected shall on payment of annual assessments for current year be entitled to all the rights and privileges of Fellows of this Society.

Sec. 12. It shall have authority through or by its Council to discipline, suspend or expel any Fellow of this Society, provided the Council must first have called the offending Fellow and his offense to the attention of his county society, with the request that they expel him and the said county society has refused, neglected or failed to do so. And the Council shall have the same authority as to summoning witnesses, taking testimony, etc., in investigating conduct of Fellows as is provided in hearings on appeal.

Sec. 13. It may divide the counties of the State into ten councilor districts, and, when the best interest of the Society and profession will be promoted thereby, organize in each a district medical society; and members of the chartered county societies, and none others, shall be members in such district societies.

Sec. 14. It shall have authority to appoint committees for special purposes from among Fellows of the Society who are not members of the House of Delegates, and such committees may report to the House of Delegates in person, and may participate in the debate thereon.

Sec. 15. It shall present a summary of its proceedings to the last general meeting of each annual session, and the same shall be published in the Transactions.

CHAPTER V.—Election of Officers

Section 1. All elections shall be by secret ballot, and a majority of the votes cast shall be necessary to elect: Provided, that when only one name is to be balloted for, vote may be taken viva voce.

Sec. 2. The House of Delegates, at its first session, shall select a Committee on Nominations, consisting of ten delegates, no two of whom shall be from the same councilor district. It shall be the duty of this committee to consult with the Fellows of the Society, and to hold one or more sessions, at which the best interests of the Society and of the profession of the State shall be carefully considered. The committee shall report the result of its deliberations to the House of Delegates in the shape of a ticket containing the names of one member for the office of President-elect and one member for each of the other offices to be filled at the annual meeting. And at the meeting at which this Constitution and By-Laws is adopted it shall also present the name of one Fellow for President.

Sec. 3. The report of the Nominating Committee and the election of officers shall take place at the session of the House of Delegates on the second day of the meeting.

Sec. 4. Nothing in this article shall be construed to prevent additional nominations being made by members of the House of Delegates.

Sec. 5. Any person known to have solicited votes for or sought any office within the gift of this Society shall be ineligible for any office for two years.

CHAPTER VI.—Duties of Officers

Section 1. The President shall preside at all meetings of the Society and of the House of Delegates; shall appoint all committees not otherwise provided for; shall deliver an annual address at such time as may be arranged; shall give a deciding vote in case of a tie, and shall perform such other duties as custom and parliamentary usage may require. He shall be the real head of the profession of the State during his term of office, and, as far as practicable, shall visit by appointment the various sections of the State and assist the councilors in building up the county societies, and in making their work more practical and useful.

Sec. 2. The President-elect shall assist the President in the performance of his duties as may be requested by him and otherwise prepare himself for assuming the duties of President. The President-elect shall be a member of the Council ex-officio and its president. Should a vacancy occur in the office of the President the President-elect shall succeed to the presidency. In case the office of President-elect should become vacant, the Executive Committee shall fill the vacancy, but no member of said Executive Committee shall be eligible.

Sec. 3. Vice-Presidents. The Vice-Presidents shall be ex-officio members of the Executive Committee. They shall assist the President as he may request and shall preside in his stead during his absence or upon his request.

Sec. 4. The Secretary-Treasurer shall give bond for the trust reposed in him whenever the House of Delegates shall deem it requisite. He shall demand and receive all funds due the Society, together with the bequests and donations. He shall, under the direction of the House of Delegates, sell or lease any estate belonging to the Society, and execute the necessary papers; and shall, in general, subject to such direction, have the care and management of the fiscal affairs of the Society. He shall pay money out of the treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination

as the House of Delegates may order, and he shall annually render an account of his doings and of the state of the funds in his hands. He shall charge upon his books the assessments against each component county society at the end of the fiscal year; he shall collect and make proper credits for the same, and perform such other duties as may be assigned to him.

Sec. 5. The Secretary-Treasurer, acting with the Committee on Scientific Work, shall prepare and issue the programs for and attend all meetings of the Society, and of the House of Delegates, and of the Executive Committee and he shall keep minutes of their respective proceedings. He shall be custodian of all record books and papers belonging to the Society. He shall provide for the registration of the members and delegates at the annual meeting. He shall keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society. In so far as it is in his power, he shall use the printed matter, correspondence and influence of his office to aid the councilors in the organization and improvement of the county societies, and in the extension of the power and usefulness of this Society. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall act as chairman of the committees on Scientific Work and on Publication. He shall employ such assistants as may be ordered by the Executive Committee or the House of Delegates. He shall annually make a report of his doings to the House of Delegates.

In order that the Secretary-Treasurer may be enabled to give that amount of time to his duties which will permit of his becoming proficient, it is desirable that he should receive some compensation. The amount of his salary shall be fixed by the House of Delegates, on recommendation of the Finance Committee.

CHAPTER VII.—Councilor Districts

Section 1. To facilitate the more perfect organization of the medical profession, the State of North Carolina is hereby divided by counties into ten councilor districts, as follows:

First District.—Bertie, Chowan-Perquimans, Currituck, Gates, Hertford, Northampton, and Pasquotank-Camden-Dare.

Second District.—Beaufort, Carteret, Craven, Hyde, Jones, Lenoir, Martin, Pamlico, Pitt, and Washington-Tyrrell.

Third District.—Bladen, Brunswick, Columbus, Duplin, New Hanover, Onslow, Pender, and Sampson.

Fourth District.—Edgecombe, Greene, Halifax, Johnston, Nash, Wayne, and Wilson.

Fifth District.—Chatham, Cumberland, Harnett, Hoke, Lee, Moore, Richmond, Robeson, and Scotland.

Sixth District.—Alamance-Caswell, Durham-Orange, Franklin, Granville, Person, Vance, Wake, and Warren.

Seventh District.—Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Montgomery, Rutherford, Stanly, and Union.

Eighth District.—Alleghany, Forsyth, Guilford, Randolph, Rockingham, Stokes, Surry, Wilkes, and Yadkin.

Ninth District.—Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Iredell-Alexander, Mitchell, Rowan, and Watauga.

Tenth District.—Buncombe, Cherokee, Haywood, Henderson, Jackson, McDowell, Macon-Clay, Madison, Polk, Swain-Graham, Transylvania, and Yancey.

CHAPTER VIII.—Council

Section 1. The Council shall be composed of the ten Councilors, and the President-elect who shall be President of the Council and shall hold daily sessions during the annual meeting of the Society, and at such other times as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall meet on the last day of the annual meeting of the Society for the outlining of work for the ensuing year. At this session it shall elect a Secretary, and it shall keep a permanent record of its proceedings. It shall, through its President, make an annual report to the House of Delegates at such time as may be provided.

Sec. 2. Each Councilor shall be organizer, peace-maker, and censor for his district. He shall visit each county in his district at least once a year for the purpose of organizing component societies where none exists, for inquiring into the condition of the profession, and for improving and increasing the zeal of the county societies and their members. He shall make an annual report of his doings, and of the condition of the profession of each county in his district to the annual meeting of the House of Delegates and to the secretary at least quarterly and more often if he has knowledge of anything in any County Society in his District about which the President or Secretary ought to be informed. The necessary traveling expenses incurred by such Councilor in the line of the duties herein imposed may be allowed by the House of Delegates upon a proper itemized statement, but this shall not be construed to include his expenses in attending the annual meeting of the Society.

Sec. 3. Collectively the Council shall be the Board of Censors of the Society. It shall consider all questions involving the rights and standing of Fellows, whether in relation to other Fellows, to the component societies, or to this Society. All questions of an ethical nature brought before the House of Delegates or the general session, shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or of a county society, upon which an appeal is taken from the decision of an individual Councilor. Its decision in all such cases shall be final.

CHAPTER IX.—The Executive Committee

Section 1. The officers of this Society (See Article VIII, Section 1, Constitution), as follows: President, President-elect, Vice-Presidents, Secretary-Treasurer, and ten Councilors shall constitute the Executive Committee of which the President of this Society shall be President and the Secretary-Treasurer shall be Secretary.

Sec. 2. The executive committee shall meet upon the call of the President or upon the call of four other members.

Sec. 3. The executive committee through its President and secretary, or through other members appointed by the President, shall have authority, and is hereby instructed to, act as liaison officer between this Society and any and all other organizations in this State, whether scientific, political, social or what not, to the end that such organizations may have the viewpoint of the Society, and such help and assistance, scientific, and otherwise as this Society might be able to render.

Sec. 4. The executive committee, ad interim, shall have the right to communicate the views of the Society and the profession on health, sanitation, legislation and on any other subject of apparent interest to the people or the profession

and it shall have the right to speak for the Society in matters regarding the conduct of affairs of the Society and its relation to the public generally, provided that such subject has not previously been acted upon by the Society. All of which shall be subject to review by the House of Delegates in regular session.

Sec. 5. The executive committee shall make a full report of its doings to the annual meeting of the House of Delegates through its Secretary.

CHAPTER X.—Committees

Section 1. The standing committees shall be as follows:

A Committee on Scientific Work.
A Committee on Legislation.
A Committee on Publication.
A Committee on Nominations.
A Committee on Finance.
A Committee on Medical Society Foundation.
A Committee on Obituaries.
A Committee on Arrangements.

And such other committees as may be necessary. Such committees shall be elected by the House of Delegates, unless otherwise provided.

Sec. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be a member and chairman, and shall determine the character and scope of the scientific proceedings of the Society for each session, subject to the instructions of the House of Delegates or the Executive Committee, or to the provisions of the Constitution and By-Laws. Thirty days previous to the annual meeting it shall prepare and issue a program announcing the order in which papers, discussions and other business shall be presented, which shall be adhered to by the Society as nearly as practicable.

Sec. 3. The Committee on Legislation shall consist of three members and the President and Secretary-Treasurer. Under the direction of the House of Delegates or the Executive Committee it shall represent the Society in securing and enforcing legislation in the interest of the public health and of the science of medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the profession to promote the general interest in local, State and national affairs and elections. Its work shall be done with the dignity becoming a great profession, and with that wisdom which will make effective its power and influence. It shall have authority to be heard before the entire Society upon questions of great concern at such time as may be arranged during the annual meeting.

Sec. 4. The Committee on Publication shall consist of three members, of which the Secretary-Treasurer shall be one and chairman, and shall have referred to it all reports, and all scientific papers and discussions heard before the Society. It shall be empowered to curtail or abstract papers and discussions, and any paper referred to it which may not be suitable for publication in the Transactions may be returned to the author. The Committee shall have authority to arrange for the publication and distribution of the Transactions after receiving competitive bids, and shall use diligence in getting them into the hands of the members. All papers read before the Society shall be the property of the Society.

Sec. 5. The Committee on Nominations shall be appointed and perform its duties in accordance with the provisions of chapter 5, section 2, of these By-Laws.

They shall also nominate a Committee on Scientific Work, a Committee on Legislation, a Committee on Publication, a Committee on Obituaries, a Committee on Finance, one member of the Committee on Medical Society Foundation, one member of the Committee on Arrangements, Delegates to the American Medical Association, and to such other bodies as the Society may determine. They shall also each third year nominate a Board of ten Councilors and a Secretary-Treasurer.

Sec. 6. The Committee on Finance, to consist of three members, shall examine the accounts of the Secretary-Treasurer and report to the Society, making suggestions as to the amount of assessments for the coming year, the remuneration of the Secretary-Treasurer, and such other suggestions concerning the finances of the Society as they may think proper.

Sec. 7. The Committee on Obituaries, to consist of three members, shall report to the general session of the Society the names of all members of the profession dying during the past year, with other data appropriate for memorial publication.

Sec. 8. The Committee on Arrangements shall consist of one member who shall be chairman, elected by the House of Delegates each year, and two or more members elected by the county society in the territory in which the annual meeting is to be held. It shall, by committees of its own selection, provide suitable accommodations for the meeting places of the Society and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary-Treasurer for publication in the program, and shall make additional announcements during the meeting as occasion may require.

CHAPTER XI.—Of the Sections and Voluntary Communications

Section 1. The newly installed President shall, at the last session of each meeting, appoint a member to serve as chairman of each of the following sections, to-wit: Surgery; Practice of Medicine; Gynecology and Obstetrics; Pediatrics; Public Health and Education; Eye, Ear, Nose, and Throat: Provided, that the President, in making his appointments of chairmen of sections, shall give due consideration to the recommendations offered by the respective sections.

Sec. 2. The chairmen of sections shall send in to the Secretary-Treasurer, not later than thirty days previous to each meeting of the Society, the titles of papers to be presented by themselves and their assistants, to be used by the Committee on Scientific Work in making a program for the meeting.

Sec. 3. No paper shall be read before the Society unless the author be present, unless his absence be due to some unavoidable circumstance. A paper presented by proxy may be referred to the Committee on Publication.

Sec. 4. No paper shall be referred to the Committee on Publication until it has been placed in the hands of the Secretary-Treasurer; and the Secretary-Treasurer shall not return any paper accepted by the Society without the consent of the Society, and then he shall take a receipt for the same.

Sec. 5. No paper shall be received by or read before this Society that has been presented to any other society, excepting only a component society or District Society of this State or that has been offered for publication in any journal, and in the case of any paper accepted, the author is supposed to have invested with the Society all rights to its ownership.

Sec. 6. No paper shall be published in the Transactions of this Society unless approved by the Committee on Publication; and any paper rejected by said com-

mittee shall be returned to the author through the Secretary-Treasurer of the Society.

Sec. 7. It is to be understood that the Society is not to be considered as endorsing all the views and opinions advanced by the authors of papers published in the Transactions of the Society.

CHAPTER XII.—Assessments and Expenditures

Section 1. An assessment of five dollars per capita on the membership of the component societies is hereby made the annual dues of this Society, provided the executive committee does not lower same for the next succeeding year on or before October 15th of the current year, which the executive committee shall have power and authority to do, which amount shall be collected by the secretary of each county society from each of its members on or before the first day of February and forwarded to the Secretary-Treasurer of the State Society before the first day of March in each year. The secretary of each county society shall forward a statement of its assessment, together with its roster of all officers and members, list of delegates, and list of non-affiliated physicians of the county, to the Secretary-Treasurer before the first day of March each year.

Sec. 2. Any county society which fails to pay its assessment, or make the reports required, on or before the date above stated, shall be held as suspended, and none of its members or delegates shall be permitted to participate in any of the business or proceedings of the State Society or of the House of Delegates, or receive the volume of Transactions, until such requirements have been met. However, when a component society is not functioning, any physician in good standing of such county may send his yearly dues to the Secretary-Treasurer of the Medical Society of the State of North Carolina direct, and in this way keep himself in good standing in the state and national organizations.

Sec. 3. All motions or resolutions appropriating money shall specify a definite amount, or so much thereof, as may be necessary for the purpose indicated, and must be approved by the House of Delegates, or by the executive committee.

CHAPTER XIII.—Rules of Conduct

The principles set forth in the Declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public.

CHAPTER XIV.—Rules of Order

The deliberations of this Society shall be governed by parliamentary usage as contained in Roberts' Rules of Order, unless otherwise determined by a vote of its House of Delegates.

CHAPTER XV.—County Societies

Section 1. All county societies now in affiliation with the State Society, or those that may hereafter be organized in this State which have adopted principles of organization not in conflict with this Constitution and By-Laws, shall, upon application to the House of Delegates, receive a charter from and become a component part of this Society and shall be known as component medical societies.

Sec. 2. As rapidly as can be done after the adoption of this Constitution and By-Laws, a medical society shall be organized in every county in the State in which no component society exists, and charters shall be issued thereto.

Sec. 3. Charters shall be issued only upon approval of the House of Delegates, and shall be signed by the President and Secretary-Treasurer of this Society. The House of Delegates reserves to itself the authority to revoke the charter of any component county society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws, but the same must be done by a specific resolution naming the Society whose charter it is desired to revoke and the cause therefor, and when said specific resolution is passed by a two-thirds majority roll call vote, it shall be the duty of the Secretary-Treasurer to call in the said charter. And the members of said society heretofore existing, shall cease to be members of a component county Medical Society and cease to be Fellows of this Society, until such time as another society may be organized in the county or the said county society reorganized, all of which must be done under the direction of and approved by this House of Delegates, before it shall be effective. However, the minority of said society, who voted to uphold the Constitution and By-Laws and dignity of this Society or the order of this Society through its Council, shall automatically continue as Fellows of this Society, so long as they keep themselves in good standing by payment of annual dues to the Secretary-Treasurer of this Society and otherwise, pending the organization of another Society in said county.

Sec. 4. Only one component medical society shall be chartered in any county. Where more than one county society exists, friendly overtures and concessions shall be made with the aid of the councilor for the district, if necessary, and all of the members brought into one organization. In case of failure to unite, an appeal may be made to the Council, which shall decide what action shall be taken.

Sec. 5. Each county society shall judge of the qualifications of its own members, but, as such societies are the portals to this Society and to the American Medical Association, every reputable and legally registered white physician who is practicing, or who will agree to practice, non-sectarian medicine, shall be entitled to membership. Before a charter is issued to any county society, full and ample notice and opportunity shall be given to every such physician in the county to become a member.

Sec. 6. Any physician who may feel aggrieved by the action of the society of his county in refusing him membership, or in suspending or expelling him, shall have the right of appeal to the councilor and from his decision either party may appeal to the council, whose decision shall be final, unless appeal is taken to the Judicial Council of the American Medical Association.

Sec. 7. In hearing appeals, the Council may admit oral or written evidence, as in its judgment will best and most fairly present the facts; but in case of every appeal, both as a board and as individual councilors in district and county work, efforts at conciliation and compromise shall precede all such hearings.

Sec. 8. When a member in good standing in a component society moves to another county in this State, his name, upon request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

Sec. 9. A physician living on or near a county line may hold his membership in that county most convenient for him to attend, on permission of the society in whose jurisdiction he resides.

Sec. 10. Each county society shall have general direction of the affairs of the profession in the county, and its influence shall be constantly exerted for bettering the scientific, moral, and material condition of every physician in the county; and systematic efforts shall be made by each member, and by the society as a whole, to increase the membership until it embraces every qualified physician in the county.

Sec. 11. Frequent meetings shall be encouraged, and the most attractive programs arranged that are possible. The members shall be especially encouraged to do post-graduate and original research work and to give the Society the first benefit of such labors.

Sec. 12. The regular annual meeting of each County Society shall be held at the regular meeting in December of each and every year and if any Society shall hold more than one meeting in a month, then at the first meeting in December, at which time the officers for the ensuing year and a delegate or delegates and alternate or alternates to the House of Delegates of the Medical Society of the State of North Carolina shall be elected, reports of officers heard and such other business transacted as might properly come before an annual meeting. The number of delegates are provided for in Chapter IV, Section 2, By-Laws.

Sec. 13. The secretary of each and every component Medical Society, shall, within one week following the Annual Meeting, transmit to the Secretary-Treasurer, a roster of the officers and delegates, and if possible, a roster of members with a check covering annual dues for each, other than Honorary Fellows. In any event such last mentioned roster of members and check for annual dues for each shall be mailed to the Secretary-Treasurer on or before March 1st. Any society failing to make such report as specified above, shall with all its members automatically be suspended, and cannot be reinstated until all reports as mentioned above are in the hands of the Secretary-Treasurer of the Medical Society of the State of North Carolina. Any member or Fellow not being so reported with check for annual dues by March 1st, shall be and is thereby suspended from Fellowship in the Medical Society of the State of North Carolina and can only be reinstated when all indebtedness to this Society has been paid. In making his annual report, the Secretary of the component society shall give for all new members, the college and date of graduation, date of license in this state and such other information as may be requested by the Secretary-Treasurer. For new members by transfer, he shall in addition give the name of county from which transfer was made and for transfer of members to other counties or state, the name of county or state to which transfer was made, also the names of all physicians in the county who are not members of local society, and names of such as may have died during the year just closing and such other facts as will show an accounting of every physician who has resided in the county during the year just closing. All of which must be in the hands of the Secretary-Treasurer on or before March 1st of current year.

CHAPTER XVI.—Order of Business

Section 1. The order of business shall be as arranged in official program, subject to change by a majority vote of the House of Delegates.

Sec. 2. The House of Delegates.

The President, or, in his absence, one of the Vice-Presidents, in the order of their rank, shall call the House to order, or, in the absence of all these officers, a presiding officer shall be chosen by a majority of the members present.

CHAPTER XVII.—Amendments

These By-Laws may be amended at any annual session by the majority vote of all the delegates present at that session, after the amendment has lain upon the table for one day.

PRINCIPLES OF MEDICAL ETHICS

OF THE

AMERICAN MEDICAL ASSOCIATION

1925

Explanatory.—"The principles set forth in the declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public."—Constitution and By-Laws, Medical Society of the State of North Carolina, adopted at Hot Springs, N. C., June 2, 1903; Chapter XII—Rules of Conduct. Also see report Committee on Ethics, pages 37 and 38, Trans. N. C. Med. Soc., 1903.

PRINCIPLES OF MEDICAL ETHICS

CHAPTER I.—The Duties of Physicians to Their Patients

THE PHYSICIAN'S RESPONSIBILITY

Section 1.—A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals.

PATIENCE, DELICACY AND SECRECY

Sec. 2.—Patience and delicacy should characterize all the acts of a physician. The confidences concerning individual or domestic life entrusted by a patient to a physician and the defects of disposition or flaws of character observed in patients during medical attendance should be held as a trust and should never be revealed except when imperatively required by the laws of the State. There are occasions, however, when a physician must determine whether or not his duty to society requires him to take definite action to protect a healthy individual from becoming infected, because the physician has knowledge, obtained through the confidences entrusted to him as a physician, of a communicable disease to which the healthy individual is about to be exposed. In such a case, the physician should act as he would desire another to act toward one of his own family under like circumstances. Before he determines his course, the physician should know the civil law of his commonwealth concerning privileged communications.

PROGNOSIS

Sec. 3.—A physician should give timely notice of dangerous manifestations of the disease to the friends of the patient. He should neither exaggerate nor minimize the gravity of the patient's condition. He should assure himself that the patient or his friends have such knowledge of the patient's condition as will serve the best interest of the patient and the family.

PATIENTS MUST NOT BE NEGLECTED

Sec. 4.—A physician is free to choose whom he will serve. He should, however, always respond to any request for his assistance in an emergency or when-

ever temperate public opinion expects the service. Once having undertaken a case, a physician should not abandon or neglect the patient because the disease is deemed incurable; nor should he withdraw from the case for any reason until a sufficient notice of a desire to be released has been given the patient or his friends to make it possible for them to secure another medical attendant.

CHAPTER II.—The Duties of Physicians to Each Other and to the Profession at Large

Article I.—Duties to the Profession

MUST UPHOLD HONOR OF PROFESSION

Section 1.—The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness. A physician should not base his practice on an exclusive dogma or sectarian system, for "sects are implacable despots; to accept their thraldom is to take away all liberty from one's action and thought." (Nicon, father of Galen.)

MEDICAL SOCIETIES

Sec. 2.—In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy and means in order that these societies may represent the ideals of the profession.

DEPORTMENT

Sec. 3.—A physician should be "an upright man, instructed in the art of healing." Consequently, he must keep himself pure in character and conform to a high standard of morals, and must be diligent and conscientious in his studies. "He should also be modest, sober, patient, prompt to do his whole duty without anxiety; pious without going so far as superstition, conducting himself with propriety in his profession and in all the actions of his life." (Hippocrates.)

ADVERTISING

Sec. 4.—Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. This does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is equally unprofessional to procure patients by indirection through solicitors or agents of any kind, or by indirect advertisement, or by furnishing or inspiring newspaper or magazine comments concerning cases in which the physician has been or is concerned. All other like self-laudations defy the traditions and lower the tone of any profession and so are intolerable. The most worthy and effective advertisement possible, even for a young physician, and especially with his brother physicians, is the establishment of a well-merited reputation for professional ability and fidelity. This cannot be forced, but must

be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not *per se* improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

It is unprofessional to promise radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients.

PATENTS AND PERQUISITES

Sec. 5.—It is unprofessional to receive remuneration from patents for surgical instruments or medicines; to accept rebates on prescriptions or surgical appliances, or perquisites from attendants who aid in the care of patients.

MEDICAL LAWS—SECRET REMEDIES

Sec. 6.—It is unprofessional for a physician to assist unqualified persons to evade legal restrictions governing the practice of medicine; it is equally unethical to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way.

SAFEGUARDING THE PROFESSION

Sec. 7.—Physicians should expose without fear or favor, before the proper medical or legal tribunals, corrupt or dishonest conduct of members of the profession. Every physician should aid in safeguarding the profession against the admission to its ranks of those who are unfit or unqualified because deficient either in moral character or education.

Article II.—Professional Services of Physicians to Each Other

PHYSICIANS DEPENDENT ON EACH OTHER

Section 1.—Experience teaches that it is unwise for a physician to treat members of his own family or himself. Consequently, a physician should always cheerfully and gratuitously respond with his professional services to the call of any physician practicing in his vicinity, or of the immediate family dependents of physicians.

COMPENSATION FOR EXPENSES

Sec. 2.—When a physician from a distance is called on to advise another physician or one of his family dependents, and the physician to whom the service is rendered is in easy financial circumstances, a compensation that will at least meet the traveling expenses of the visiting physician should be proffered. When such a service requires an absence from the accustomed field of professional work of the visitor that might reasonably be expected to entail a pecuniary loss, such loss should, in part at least, be provided for in the compensation offered.

ONE PHYSICIAN TO TAKE CHARGE

Sec. 3.—When a physician or a member of his dependent family is seriously ill, he or his family should select a physician from among his neighboring colleagues to take charge of the case. Other physicians may be associated in the care of the patient as consultants.

Article III.—Duties of Physician in Consultations

CONSULTATIONS SHOULD BE ENCOURAGED

Section 1.—In serious illness, especially in doubtful or difficult conditions, the physician should request consultations.

CONSULTATION FOR PATIENT'S BENEFIT

Sec. 2.—In every consultation, the benefit to be derived by the patient is of first importance. All the physicians interested in the case should be frank and candid with the patient and his family. There never is occasion for insincerity, rivalry or envy, and these should never be permitted between consultants.

PUNCTUALITY

Sec. 3.—It is the duty of a physician, particularly in the instance of a consultation, to be punctual in attendance. When, however, the consultant or the physician in charge is unavoidably delayed, the one who first arrives should wait for the other for a reasonable time, after which the consultation should be considered postponed. When the consultant has come from a distance, or when for any reason it will be difficult to meet the physician in charge at another time, or if the case is urgent, or if it be the desire of the patient, he may examine the patient and mail his written opinion, or see that it is delivered under seal, to the physician in charge. Under these conditions, the consultant's conduct must be especially tactful; he must remember that he is framing an opinion without the aid of the physician who has observed the course of the disease.

PATIENT REFERRED TO SPECIALIST

Sec. 4.—When a patient is sent to one specially skilled in the care of the condition from which he is thought to be suffering, and for any reason it is impracticable for the physician in charge of the case to accompany the patient, the physician in charge should send to the consultant by mail, or in the care of the patient under seal, a history of the case, together with the physician's opinion and an outline of the treatment, or so much of this as may possibly be of service to the consultant; and as soon as possible after the case has been seen and studied, the consultant should address the physician in charge and advise him of the results of the consultant's investigation of the case. Both these opinions are confidential and must be so regarded by the consultant and by the physician in charge.

DISCUSSIONS IN CONSULTATION

Sec. 5.—After the physicians called in consultation have completed their investigations of the case, they should meet by themselves to discuss conditions and determine the course to be followed in the treatment of the patient. No statement or discussion of the case should take place before the patient or friends, except in the presence of all the physicians attending or by their common consent; and no opinions or prognostications should be delivered as a result of the deliberations of the consultants which have not been concurred in by the consultants at their conference.

ATTENDING PHYSICIAN RESPONSIBLE

Sec. 6.—The physician in attendance is in charge of the case and is responsible for the treatment of the patient. Consequently, he may prescribe for the

patient and at any time is privileged to vary the mode of treatment outlined and agreed on at a consultation whenever, in his opinion, such a change is warranted. However, at the next consultation, he should state his reasons for departing from the course decided on at the previous conference. When an emergency occurs during the absence of the attending physician, a consultant may provide for the emergency and the subsequent care of the patient until the arrival of the physician in charge, but should do no more than this without the consent of the physician in charge.

CONFLICT OF OPINION

Sec. 7.—Should the attending physician and the consultant find it impossible to agree in their view of a case another consultant should be called to the conference or the first consultant should withdraw. However, since the consultant was employed by the patient in order that his opinion might be obtained, he should be permitted to state the result of his study of the case to the patient, or his next friend, in the presence of the physician in charge.

CONSULTANT AND ATTENDANT

Sec. 8.—When a physician has attended a case as a consultant, he should not become the attendant of the patient during that illness except with the consent of the physician who was in charge at the time of the consultation.

Article IV.—Duties of Physicians in Cases of Interference

CRITICISM TO BE AVOIDED

Section 1.—The physician, in his intercourse with a patient under the care of another physician, should observe the strictest caution and reserve; should give no disingenuous hints relative to the nature and treatment of the patient's disorder; nor should the course of the conduct of the physician, directly or indirectly, tend to diminish the trust reposed in the attending physician. In embarrassing situations, or wherever there may seem to be a possibility of misunderstanding with a colleague, the physician should always seek a personal interview with his fellow.

SOCIAL CALLS ON PATIENT OF ANOTHER PHYSICIAN

Sec. 2.—A physician should avoid making social calls on those who are under the professional care of other physicians without the knowledge and consent of the attendant. Should such a friendly visit be made, there should be no inquiry relative to the nature of the disease or comment upon the treatment of the case, but the conversation should be on subjects other than the physical condition of the patient.

SERVICES TO PATIENT OF ANOTHER PHYSICIAN

Sec. 3.—A physician should never take charge of or prescribe for a patient who is under the care of another physician, except in an emergency, until after the other physician has relinquished the case or has been properly dismissed.

CRITICISM TO BE AVOIDED

Sec. 4.—When a physician does succeed another physician in the charge of a case, he should not make comments on or insinuations regarding the practice of the one who preceded him. Such comments or insinuations tend to lower the esteem of the patient for the medical profession and so react against the critic.

EMERGENCY CASES

Sec. 5.—When a physician is called in an emergency and finds that he has been sent for because the family attendant is not at hand, or when a physician is asked to see another physician's patient because of an aggravation of the disease, he should provide only for the patient's immediate need and should withdraw from the case on the arrival of the family physician after he has reported the condition found and the treatment administered.

WHEN SEVERAL PHYSICIANS ARE SUMMONED

Sec. 6.—When several physicians have been summoned in a case of sudden illness or of accident, the first to arrive should be considered the physician in charge. However, as soon as the exigencies of the case permit, or on the arrival of the acknowledged family attendant or the physician the patient desires to serve him, the first physician should withdraw in favor of the chosen attendant; should the patient or his family wish some one other than the physician known to be the family physician to take charge of the case the patient should advise the family physician of his desire. When, because of sudden illness or accident, a patient is taken to a hospital, the patient should be returned to the care of his known family physician as soon as the condition of the patient and the circumstances of the case warrant this transfer.

A COLLEAGUE'S PATIENT

Sec. 7.—When a physician is requested by a colleague to care for a patient during his temporary absence, or when, because of an emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as soon as possible.

RELINQUISHING PATIENT TO REGULAR ATTENDANT

Sec. 8.—When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter.

SUBSTITUTING IN OBSTETRIC WORK

Sec. 9.—When a physician attends a woman in labor in the absence of another who has been engaged to attend, such physician should resign the patient to the first one engaged, upon his arrival; the physician is entitled to compensation for the professional services he may have rendered.

Article V.—Differences Between Physicians

ARBITRATION

Section 1.—Whenever there arises between physicians a grave difference of opinion which cannot be promptly adjusted, the dispute should be referred for arbitration to a committee of impartial physicians, preferably the Board of Censors of a component county society of the Medical Society of the State of North Carolina.

Article VI.—Compensation

LIMITS OF GRATUITOUS SERVICE

Section 1.—The poverty of a patient and the mutual professional obligation of physicians should command the gratuitous services of a physician. But endowed institutions and organizations for mutual benefit, or for accident, sickness and life insurance, or for analogous purposes, have no claim upon physicians for unremunerated services.

CONTRACT PRACTICE

Sec. 2.—It is unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient or which interfere with reasonable competition among the physicians of a community. To do this is detrimental to the public and to the individual physician, and lowers the dignity of the profession.

SECRET DIVISION OF FEES CONDEMNED

Sec. 3.—It is detrimental to the public good and degrading to the profession, and therefore unprofessional, to give or to receive a commission. It is also unprofessional to divide a fee for medical advice or surgical treatment, unless the patient or his next friend is fully informed as to the terms of the transaction. The patient should be made to realize that a proper fee should be paid the family physician for the service he renders in determining the surgical or medical treatment suited to the condition, and in advising concerning those best qualified to render any special service that may be required by the patient.

CHAPTER III.—The Duties of the Profession to the Public

PHYSICIANS AS CITIZENS

Section 1.—Physicians, as good citizens and because their professional training specially qualifies them to render this service, should give advice concerning the public health of the community. They should bear their full part in enforcing its laws and sustaining the institutions that advance the interests of humanity. They should coöperate especially with the proper authorities in the administration of sanitary laws and regulations. They should be ready to counsel the public on subjects relating to sanitary police, public hygiene and legal medicine.

PUBLIC HEALTH

Sec. 2.—Physicians, especially those engaged in public health work, should enlighten the public regarding quarantine regulations; on the location, arrangement and dietaries of hospitals, asylums, schools, prisons and similar institutions; and concerning measures for the prevention of epidemic and contagious diseases. When an epidemic prevails, a physician must continue his labors for the alleviation of suffering people, without regard to the risk to his own health or life or to financial return. At all times, it is the duty of the physician to notify the properly constituted public health authorities of every case of communicable disease under his care, in accordance with the laws, rules and regulations of the health authorities of the locality in which the patient is.

PUBLIC WARNED

Sec. 3.—Physicians should warn the public against the devices practiced and the false pretensions made by charlatans which may cause injury to the health and loss of life.

PHARMACISTS

Sec. 4.—By legitimate patronage, physicians should recognize and promote the profession of pharmacy; but any pharmacist, unless he be qualified as a physician, who assumes to prescribe for the sick, should be denied such countenance and support. Moreover, whenever a druggist or pharmacist dispenses deteriorated or adulterated drugs, or substitutes one remedy for another designated in a prescription, he thereby forfeits all claims to the favorable consideration of the public and physicians.

CONCLUSION

While the foregoing statements express in a general way the duty of the physician to his patients, to other members of the profession and to the profession at large, as well as of the profession to the public, it is not to be supposed that they cover the whole field of medical ethics, or that the physician is not under many duties and obligations besides these herein set forth. In a word, it is incumbent on the physician that, under all conditions, his bearing toward patients, the public, and fellow practitioners should be characterized by a gentlemanly deportment and that he constantly should behave toward others as he desires them to deal with him. Finally, these principles are primarily for the good of the public, and their enforcement should be conducted in such a manner as shall deserve and receive the endorsement of the community.

COMMITTEE REPORTS

REPORT OF COMMITTEE ON MEMORIAL FOR THE NORTH CAROLINA PHYSICIANS WHO DIED IN THE WORLD WAR

Dr. J. P. Munroe, Chairman, presented the following report and supplementary report, both of which, on motion of Dr. Cyrus Thompson, duly seconded, were adopted.

Report

To the House of Delegates of the Medical Society of the State of North Carolina:

Your committee on memorial for the physicians, members of this Society, who died in the World War are pleased to report that Duke University, through Dr. W. C. Davison, dean of the medical school, has kindly offered to erect a bronze tablet, blueprint of which Dr. Davison presented; such tablet to be erected at the expense of Duke University and placed in the hospital building; the exact wording on the tablet to be mutually agreed upon by Dr. Davison and your committee.

Your committee recommends the acceptance, with thanks, of this generous offer.

Supplementary Report

Your committee further recommends that a similar memorial tablet be erected by the Medical Society of the State of North Carolina, in cooperation with Dr. W. C. Davison, dean of the medical school of Duke University, to the nurses who died in the World War; this tablet also to be placed in the Duke University hospital.

Dr. J. E. S. Davidson, Charlotte, rose to a point of personal privilege, stating that he and certain other members of the Mecklenburg County Medical Society were in December, 1929, duly elected delegates from that body to the State Society but that his name and the names of these others were not reported to the Secretary-Treasurer of the State Society as the delegates from the Mecklenburg County Society and do not so appear in the list of delegates given in the printed program. Dr. Davidson asked for a ruling from the Chair as to who are the duly elected and qualified delegates from the Mecklenburg County Society. On motion, duly seconded, this matter was referred to the incoming Executive Committee.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. Benj. J. Lawrence, Chairman, read the following report, which on motion, duly seconded, was adopted:

Mr. President and Members of the House of Delegates:

Your committee on Public Policy and Legislation wishes to submit the following report. The Legislature has not been in session since

the House of Delegates last met and therefore there has been no Medical Legislation enacted in this State during the past year.

Congress has been in session and a few matters of interest to the Medical Profession have come up. There was an attempt to increase the tariff on surgical instruments. Your committee earnestly requested our senators to defeat the measure. The Porter Narcotic Bill is now pending. Your committee has communicated with our senators, asking them to defeat this bill on the grounds that it will not improve the Harrison Narcotic Act and it will create a central bureau in Washington under a layman and it will give him more power than we feel he should have.

The last House of Delegates instructed your committee to give special attention and thought to the question of Expert Testimony in the courts of North Carolina. The committee met on two occasions and went over this matter in a rather general way. We selected a number of outstanding men of our profession to consult with us and some of the leaders of the Bar, including our distinguished Attorney General. The opinion was reached that there is no statute governing the question of Expert Testimony in North Carolina today. And therefore to get this matter under definite statute it would be necessary for us to go to the Legislature and ask that such a measure be enacted.

There are certain fairly well defined rules and general customs which are adhered to in a more or less general manner. There is no definite method of qualifying one for Expert Testimony in the courts of North Carolina other than that he be a regular practicing physician duly licensed by his State and a graduate of a recognized school. The above facts having been established it is customary in this State that such a person be qualified as a Medical Expert and under such qualification he is permitted to testify on any medical subject.

I admit that this custom has its great advantages in that it is a mark of confidence and a badge of honor placed on every good and regular physician; but it has certain weaknesses and is open to criticism. This matter has been considered by the House of Delegates of the American Medical Association and a committee appointed to confer with a committee from the American Bar Association. As to the advisability and wisdom of legislation regarding this point, your committee has given considerable thought and study and they feel that this very important and far reaching matter should have continued study. We respectfully request you to ask the incoming executive and legislative committee to consider further this question and the advisability of introducing legislation, looking toward the establishment of a Sanity Commission in North Carolina.

Your committee feels very keenly that the doctors of North Carolina are being inconvenienced and annoyed by certain very common practices that are in vogue throughout the courts of our State. There is at times a very apparent disregard for the convenience of the physician on the part of certain lawyers.

We would urge our fellow members to be as courteous and as painstaking as they can in considering this important question, yet we would

urge them to throw up around them such a bulwark of professional dignity and poise as to command the respect and attention of the courts and the attorneys. We would then urge them to respectfully ask for legitimate and full compensation. We feel that a respected member of our profession should be entitled to a minimum of from $50.00 to $100.00 per day for court service with a minimum of from $25.00 to $50.00 per day for additional days. Of course it is to be understood that under the statute of North Carolina these figures could not be used arbitrarily, they are merely suggested as a guide and that as a matter of public policy we would urge you to work toward this end.

Respectfully submitted,

B. J. Lawrence, *Chairman.*
J. T. Burrus,
K. P. B. Bonner.

REPORT OF COMMITTEE TO CONFER WITH A LIKE COMMITTEE FROM THE NORTH CAROLINA DENTAL SOCIETY

Dr. James M. Parrott, Chairman, read the report of this committee, which on motion of Dr. Cyrus Thompson, duly seconded, was adopted, Dr. Thompson's motion carrying with it a proviso that adoption of the report does not include the fixing of the place of the next meeting of the State Medical Society.

Dr. L. A. Crowell, President, and to the House of Delegates of the Medical Society of the State of North Carolina:

Your committee appointed to confer with a like committee from the State Dental Society at the request of the State Dental Society begs to submit the following:

Your committee, all members being present, met with the committee from the State Dental Society, all members being present, at the Sir Walter Hotel, Raleigh, January 15th, 1930, and unanimously agreed as follows:

(1) That it is desirable to have the two societies meet at the same time and place though it is recognized that no single town in the State except Asheville could entertain both societies at the same time, and the only other combination that would seem possible would be for the two organizations to meet in Pinehurst and Southern Pines.

(2) That it was desirable to have two dentists from the State Dental Society on our program and likewise two physicians from the State Medical Society to appear on the program of the State Dental Society, and to that end recommendation was made by our committee to President Crowell and by the Dental Society committee to President Wheeler that this matter be put into effect for the present session, and on the recommendation of President Wheeler of the State Dental Society, President Crowell invited Dr. J. Martin Fleming of Raleigh and Dr. J. S. Betts of Greensboro to appear on our program this year and

Dr. Wheeler, President of the State Dental Society, at the suggestion of Dr. Crowell invited Dr. H. H. Briggs of Asheville and Dr. J. S. Norman of Hickory to appear on their program this year.

(3) It was also decided that it would be wise for Fraternal Delegates from each Society to attend the meeting of the other, this recommendation was likewise made to the Presidents of the two organizations and the dentists whose names appear in our program were appointed as Fraternal Delegates to our meeting and the delegates whose names appear in our program were appointed as Fraternal Delegates to the State Dental Society meeting.

(4) It is suggested that the Medical Society of the State of North Carolina meet in Pinehurst again in 1931 and the State Dental Society meet at Southern Pines at the same time and that like arrangements as mentioned in No. 2 and No. 3 be continued for the year 1931.

(5) It was suggested that a permanent liaison committee should be appointed from both bodies to continue the coöperation in regard to programs for future meetings, however, if the new Constitution and By-Laws are adopted, provision is made therein for such a liaison committee.

All of which is respectfully submitted for your action with recommendation for its approval.

J. M. Parrott, M.D., *Chairman,*
J. T. Burrus, M.D.,
J. G. Murphy, M.D.

REPORTS OF COUNCILORS

First District—Dr. H. D. Walker, Councilor

The First District Medical Society has had four meetings since the last annual meeting of the State Medical Society. At one of these the President of the State Society, Dr. L. A. Crowell, and at another the Secretary-Treasurer of the State Society, Dr. L. B. McBrayer, was with us. The Chairman of the State Industrial Commission was present at another of our meetings. The First District Society is functioning, and everything seems to be all right in the district.

Second District—Dr. Grady G. Dixon, Councilor

We still admit that the Second District is doing well and that it is the best district in the State.

At this point the Second Vice-President, Dr. Wm. E. Warren, at the request of the President, took the chair.

The reports for the Fourth and Sixth Districts were read by the respective councilors, as follows:

Fourth District—Dr. Wm. H. Smith, Councilor

Organized medicine in the Fourth District is continuing the progress which was started several years ago.

Each of the counties has a Medical Society and while some of them are not as active as we wish, they are not retrogressing.

This lack of activity is probably accounted for by the activity of the District Society, which meets every three months.

The meetings are well worth while and the doctors throughout the District attend well and are proud of it.

Fifth District—Dr. E. A. Livingston, Councilor

During the past year the Fifth District Medical Society has met twice; the first meeting being held at the Sanatorium during October, 1929, and the second meeting at Laurinburg, on April 3, 1930. The meetings were very well attended, about eighty being present at each meeting.

Interesting and instructive papers pertaining to both medical and surgical conditions were presented. The papers were freely discussed by those present.

At the Sanatorium meeting Dr. O. L. McFadyen of Fayetteville, was elected president of the Society, and Dr. W. P. McKay of Fayetteville, was elected Secretary. I have attended meetings of the Scotland, Richmond, Cumberland and Robeson County Medical Societies since the last State meeting, and have met with the President's Staff and the North Carolina Workmen's Compensation Board, at each meeting they have held, all being held in Raleigh. I find most of the doctors in my District who are doing the work for those insured under the Workmen's Compensation Act, are pleased with the Workmen's Compensation and the consideration they have had from the Board.

Harmony continues to prevail in my District.

Sixth District—Dr. V. M. Hicks, Councilor

It has now been my privilege to be the Councilor for the Sixth Medical District for five years. I believe I can safely say that we of the Sixth District, have on the whole the best attitude toward organized medicine and the finest spirit of good fellowship that it has been my pleasure to witness since I have been Councilor of the District.

Last year we had our usual Spring and Fall District meetings. The Spring meeting was held in June at Burlington and the Fall meeting in Durham at Duke University. Both of these meetings were splendidly attended. The scientific programs were fine, and the doctors who were our hosts demonstrated their enthusiasm, for which we were all profoundly grateful. Our District meetings have truly become miniature State Society meetings.

Besides attending two meetings of the Council called by our President, I have visited the County units this Spring and in each instance presented to them a member of the State Industrial Commission, who discussed that phase of the Workmen's Compensation Law affecting doctors, and these meetings ended in a round-table discussion. I feel that these meetings have gone a long way in settling the misunderstandings that have come up between the Industrial Commission and the doctors.

I cannot close my report without mentioning the profound rejuvenation that has occurred in the Wake County Medical Society during the past year or so. Its membership has so increased that for the first time we have four delegates from this County unit. The monthly meetings have been unusually fine. During the year several special evening dinner meetings have been held. Typical of these may I mention the one held in January at the Hotel Carolina in Raleigh, which was a "Live-at-Home" dinner. The doctors' wives were invited, as well as a number of out-of-town guests. Our Governor, O. Max Gardner, addressed this meeting, giving us a vivid picture of the life of his Honored Father, who as you know was a Country doctor. The Governor greatly impressed everyone present with his fine feeling toward our profession. Mrs. Gardner graced the occasion as one of the honored guests. Our Secretary, Dr. L. B. McBrayer, was the only other speaker. The success of such an occasion should particularly impress you in view of the fact that we have in Raleigh another medical organization, the Raleigh Academy of Medicine, which has for time almost immemorial sponsored such occasions. Due credit should be given the leaders of the Wake County Society, who are Dr. R. P. Noble, last year's president; Dr. Z. M. Caveness, this year's president; and the most efficient Secretary, Dr. R. B. Wilkins. I feel that we should all take heart in this remarkable rejuvenation.

Seventh District—Dr. T. C. Bost, Councilor

The annual meeting of the Seventh District Medical Society was held in Charlotte, N. C., October 10, 1929. This was a very interesting and instructive meeting. Over a hundred members were present. Dr. L. A. Crowell, President North Carolina Medical Society, was present and made a very instructive talk.

A banquet was given to the Society by the Mecklenburg County Medical Society, which was greatly enjoyed and highly appreciated by the members.

Dr. W. B. Porter, Richmond, Va., was our invited guest and gave a most interesting clinic in the afternoon and also addressed us at our banquet.

Dr. J. H. Tucker, Charlotte, was elected president, Dr. R. M. King, Concord, vice-president, and Dr. C. H. Pugh, Gastonia, secretary. The next meeting will be held in Concord, October, 1930.

I have kept in touch with all of the County Medical Societies in the District and find that they are all organized and are holding regular meetings. Most of the counties have comparatively small membership except Mecklenburg and Gaston counties, but practically all of the doctors in the District belong to the county societies. Owing to the small membership in most of the counties, the Mecklenburg County Society, which has a large membership and meets twice a month, is now sending out their programs of each meeting to all of the men in the District, thus affording members of small societies an opportunity to attend more scientific meetings than they otherwise might have.

The Montgomery County Medical Society, formerly in the Fifth District, has been transferred to the Seventh District, which District I represent.

Generally speaking for the District, the Workmen's Compensation Act has functioned fairly satisfactorily for its first year of operation. However, there has been much complaint from injured employees about not being permitted to have their own choice of physician. Under the act the insurance companies are permitted to select their physician.

The Mecklenburg County Medical Society, which is the largest in the District, has passed a resolution that an employee should have the privilege of selecting his own physician in case of injury received while working for his employer.

Eighth District—Dr. R. B. Davis, Councilor

The Eighth District has had two meetings, one in the fall and one in the spring, with around one hundred doctors present at each. I might say that the Eighth District always has a little more sociability about it than the other districts, because it always has a dinner meeting. This feature has increased our attendance about thirty per cent. I am anxious to see the other districts in the State try it, because if it will also increase their attendance thirty per cent it is certainly worth while.

Ninth District—Dr. M. R. Adams, Councilor

As Councilor of the Ninth District Medical Society, I am able to report satisfactory progress and conditions generally are favorable. In most of the larger counties in the District the organizations are pretty well kept up but in the more sparsely settled counties it is difficult to keep up the interest.

The most important event of the year is the annual meeting which was held in Hickory on the 26th of last September. The Ninth District Bulletin, issued this year, a copy of which was sent to every doctor whose name appeared in the Transactions of the North Carolina Medical Society, gives details of the meeting.

In 1929 the Ninth District Medical Society held a two weeks Pediatric Clinic in Statesville. Dr. G. W. Kutscher directed the meeting and kindly came to Statesville and spent two weeks; and gave his time and best efforts to make the clinic a success. Lectures and clinics were held by Dr. G. W. Kutscher and Dr. Frank Howard Richardson of Black Mountain and other distinguished men. The clinic was a great success; the attendance throughout was good. The Society feels that it has inaugurated something that will be of benefit in the future and has demonstrated that each district society can hold clinics that will be of great help to the general practitioner. It has also shown that in our own territory are men who are able to hold successful clinics and that it is not necessary for us to send out of the State to obtain the highest class of teachers and clinicians. As District Councilor I wish to thank every man who came to lecture and hold a clinic and assure each one of them that every lecture was greatly enjoyed and was a success.

As this was the first clinic ever held by a District Society in North Carolina and was to a certain degree an experiment, we feel that we can draw certain conclusions and lessons from this clinic which will be invaluable to the District Societies who hold clinics in the future.

1. Two weeks of lectures and clinics is too long—one week is sufficient.

2. The clinics should be held preferably in the afternoon. This allows the doctors to attend to their morning work and then travel quite a distance, take in the clinic and return home late in the afternoon or early evening. It is interesting to note that a number of doctors came to the clinic practically every day from quite a distance.

3. The clinics must be well organized before they are begun and must be well advertised.

4. Provision must be made for an ample supply of material and cases.

5. An able man must be secured to be on hand throughout the entire course and direct the clinic, have the cases prepared and ready for the clinical demonstrations and attend to the many other details that are necessary to make the clinic a success.

6. The coöperation of the County Health Officer, City Health Officer and the County and City Nurses should be secured.

7. A subject for study should be chosen which is of interest to the general practitioner. The clinics must be arranged with the idea of giving the general practitioner practical, helpful and useful information. Purely theoretical things should be eliminated and the entire course should be made intensely practical throughout.

Looking toward the future we can say that every District Society and in fact even the County Societies can take up subjects and have clinics of their own without any great cost to themselves or to those who attend. Competent teachers can be had in every section of North Carolina who can hold clinics equal to those in any other medical center anywhere. We do not have to go outside of North Carolina to get men to hold these clinics. We do not wish to discourage or criticize anyone who gets teachers from the outside, for this at times is desirable. When teachers from other states are requested to come and hold clinics and lectures it is a very fine thing and this Society wishes to encourage this also.

We feel that our experience with this clinic warrants us in going a little further in suggestions. One single lecture and clinic on certain diseases such as diabetes, Bright's disease, heart conditions may be held in one afternoon or some evening. While the subject cannot be covered entirely, yet much good can be done by the lecture lasting one afternoon or one evening.

The next meeting of the Ninth District Medical Society will be held in Salisbury, N. C., on Thursday, September 25th. The largest attendance in the history of the Society is expected at this meeting.

Tenth District—Dr. J. F. Abel, Councilor

I have visited only one Society at a regular meeting. Only a few of the County Societies have meetings. I have been in several of my

thirteen counties and discussed our professional interests with individuals. In a great many of my counties we are in a rut in not attending medical meetings or clinics, not buying many books, not contacting with the profession generally in any way. On the other hand I have in my district some strong societies, where the profession would be leaders in any community.

It now appears that immediately after our annual meeting May 12th at Marion there will be established a chest clinic, probably at Oteen, where there is almost unlimited material, records and equipment. There is a plan well underway for a children's clinic also.

In many places there is a lack of proper professional spirit and courtesy, criticism is rife and ethics rather loose. This report is limited because of the fact that our annual meeting, for good reasons, was postponed until May 12th.

The following items have been approved by our District Society:

1. Clinic and postgraduate work on five different subjects in two different places in the District.
2. A branch State Sanatorium for the treatment of tuberculosis at Asheville.
3. A branch State Laboratory of Hygiene at Asheville.
4. A whole time superintendent for the State Orthopedic Hospital and directorate distributed over the State.

Chairman Warren read the following telegram, which, on motion, duly seconded and carried, was referred to the Committee on Public Policy and Legislation:

Statesville, N. C., April 28, 1930.

Dr. L. B. McBrayer, Secretary,
N. C. Medical Society,
Pinehurst, N. C.

Urgently request State Society take unanimous action regarding twenty-five dollar annual tax on doctors. Suggest Society ask legislature to abolish this tax entirely. Will be down later. Kindest regards.

JAMES W. DAVIS.

Dr. L. S. Booker, delegate from the Durham-Orange County Medical Society, presented a report and recommendations as follows:

SPECIAL COMMITTEE'S REPORT ON THE CASE OF DR. HAYES

To the Durham-Orange County Medical Society:

Your committee appointed to draft suitable resolutions to be presented to the North Carolina Medical Society concerning the case of Dr. R. B. Hayes, of Hillsboro, begs to submit the following:

1. Your committee wishes to be understood that this report is not intended as a criticism of or to antagonize the Supreme Court of North Carolina (which now has the case under advisement), any Superior Court, or the North Carolina Industrial Commission, but is intended as a dignified report of the facts as the committee sees them.

2. Whereas, Much publicity has been given the action of the North Carolina Industrial Commission in committing to jail for contempt Dr. R. B. Hayes, of Hillsboro; and

3. Whereas, Some ten county medical societies have endorsed the position taken by the Durham-Orange County Society in the matter; and

4. Whereas, There has been much misunderstanding on the part of the public and the press as to the position taken by the Durham-Orange County Medical Society, and much unfavorable editorial comment voiced, based on what your committee believes is misunderstanding;

5. Be it therefore resolved, that the following facts in the case of Dr. R. B. Hayes and the North Carolina Industrial Commission, as your committee sees them, be presented to the North Carolina State Medical Society at its Pinehurst meeting, for their consideration:

A. On or about March 1, 1930, Dr. R. B. Hayes of Hillsboro, appeared as a witness before the North Carolina Industrial Commission at Efland, N. C., to give testimony in an accident case which he (Dr. Hayes) had attended the latter part of October, 1929. The evidence before the Durham-Orange County Medical Society, leads your committee to believe that Dr. R. B. Hayes testified to the facts as he knew them concerning the accident. It appears to your committee from the records that the victim of the accident suffered a stroke of apoplexy some two months after the accident, and some two months after Dr. R. B. Hayes had completed his treatment of the accident, and it appears further to your committee that Dr. R. B. Hayes had not treated the victim of the accident and had no personal knowledge of the condition of the patient since the accident, occurring some two months prior to the condition upon which a claim was based. It further appears to your committee from the records that the victim of the accident had made claim that his present condition (apoplexy) was the result of the accident occurring in October, 1929. It also appears from the records that after Dr. R. B. Hayes had testified to such facts as he knew, he (Dr. Hayes) was asked by the Chairman of the North Carolina Industrial Commission if he (Dr. Hayes) had an opinion as to what effect, if any, the original accident occurring more than two months prior to the conditions under consideration by the North Carolina Industrial Commission, had upon the present condition of the patient. The records lead your committee to believe that Dr. R. B. Hayes stated he did have an opinion (whether favorable or unfavorable to the patient does not occur in the records), Dr. Hayes, upon being asked to state his opinion, asked the Chairman of the North Carolina Industrial Commission if he (Dr. Hayes) were being qualified as an expert. From the records it appears that the Chairman of the Commission answered in the negative, and that Dr. Hayes refused to answer the question or state his opinion. It further appears from the records that upon Dr. Hayes' refusal to state his opinion without being qualified as an expert witness, the Chairman of the Commission adjudged Dr. Hayes in contempt and sentenced him to ten days in the Orange County jail.

B. Dr. R. B. Hayes is a member in good standing in both the Durham-Orange County Medical Society and the North Carolina State Medical Society. The Durham-Orange County Medical Society was

called in special session on or about March 3, 1930, to consider the case. The local society at the time of this meeting felt, and still feels, your committee believes, that Dr. Hayes was within his rights not to give his personal and technical expert opinion to the Industrial Commission without being qualified as an expert witness, if he desired to be so qualified. Your committee further feels that it is the common custom in North Carolina courts to unhesitatingly qualify physicians as expert witnesses who are summoned to give expert testimony.

C. The side issue of an alleged dispute or misunderstanding between Dr. R. B. Hayes and the Chairman of the North Carolina Industrial Commission, allegedly occurring before the hearing in Efland, on March 1, 1930, has not been given any consideration by the Durham-Orange County Medical Society, or your committee, and your committee believes that the Durham-Orange County Medical Society has no interest whatever in such an alleged dispute or misunderstanding. Your committee believes, however, that the alleged dispute or misunderstanding between Dr. Hayes and the Chairman of the North Carolina Industrial Commission has been largely used by certain North Carolina newspapers to befog the position of the Durham-Orange County Medical Society to bring the society into disrepute. Your committee reiterates its belief that the local society is interested only in the question of the right of the North Carolina Industrial Commission to depart from an established custom of North Carolina courts to refuse to qualify a physician as an expert when the physician is being used as an expert witness. Your committee further believes that a physician, standing upon his rights, established by long custom of North Carolina courts, should not be adjudged in contempt and confined to jail as a common criminal.

D. At the special meeting of the Durham-Orange County Medical Society, held on or about March 3, 1930, a special committee, composed of Drs. Foy Roberson, Chairman, R. W. Stanford, and E. A. Abernethy, was appointed with power to act in behalf of Dr. Hayes. Owing to the short time between the meeting of the local society and the time of the beginning of Dr. Hayes' jail sentence, the special committee could do nothing but employ counsel for Dr. Hayes in an effort to prevent his incarceration in the common jail of Orange County. The following day (on or about March 4th) an order was received from the North Carolina Industrial Commission by the sheriff of Orange County committing Dr. Hayes to jail. Under a writ of habeas corpus proceedings the order was stayed, the writ returnable before Judge Harris of the Superior Court, who on April 9th upheld the North Carolina Industrial Commission. Your committee wishes at this point to invite your attention to the fact that the question of the right of Dr. Hayes to request that he be qualified as an expert witness before giving expert testimony was not argued before the Court (by agreement or counsel for both parties). The two points argued were: First, Was the North Carolina Industrial Commission a court with power to cite and punish for contempt; and secondly, if so, was Dr. Hayes in contempt. The Court ruled in the affirmative to both questions, and by consent of counsel for both sides the case was sent to the North Carolina Supreme

Court for review under a writ of certiorari. The case is now pending before the North Carolina Supreme Court.

6. Your committee is of the opinion that the present status of the case as above cited portends great danger to the medical profession of North Carolina, and that every physician in the State is vitally interested. Your committee, therefore recommends that,

7. That the facts and beliefs brought out in this special report be carried before the Medical Society of the State of North Carolina for their consideration, and

8. Your committee wishes to recommend to the State Medical Society that a committee from the Society be appointed to confer with the North Carolina Industrial Commission to work out ways and means to prevent further misunderstandings between the North Carolina Industrial Commission and members of the Society which might probably lead to similar occurrences.

Respectfully submitted

Foy Roberson, *Chairman,*
E. A. Abernethy, *Secretary,*
R. W. Stanford,
L. S. Booker,
Wm. M. Coppridge.

Dr. R. B. Davis moved that the report and recommendations be referred to the Executive Committee. An amendment was offered, and accepted by Dr. Davis, to refer it also to the Committee on Public Policy and Legislation. The amended motion was duly seconded. The matter was discussed by Dr. G. H. Macon, who stated that the Warren County Society had adopted a similar resolution; Dr. Booker, Dr. Cyrus Thompson, Dr. J. P. Munroe, and Dr. James M. Northington. Dr. C. B. Williams offered an amendment that the State Medical Society, through its delegates assembled, go on record now as supporting the Durham-Orange County Medical Society in its position in this matter. The amendment was duly seconded. Discussion by Dr. Cyrus Thompson. Chairman Warren ruled the amendment offered by Dr. Williams as out of order. The amended motion referring the report and recommendations to the Executive Committee and the Committee on Legislation was put to vote and carried.

Chairman Warren read the following letter:

Diagnostic Hospital, U. S. V. B.,
Washington, D. C., 4/27/30.

Dear Dr. Crowell:

Thank you very much for your kind letter. You really were too complimentary, and I am amazed that you know so much about my military record.

I am with you in spirit today as you and my conferes foregather at Pinehurst. Remember me kindly to Dr. McBrayer, our efficient secretary.

Today is my best day. I am going out for a ride and hope to be home soon.

Fraternally,

(Signed) Jno. W. MacConnell.

ELECTION OF NOMINATING COMMITTEE

The delegates assembled according to districts and elected the following as members of the Nominating Committee:

District No. 1—
District No. 2—Wm. E. Warren.
District No. 3—J. F. Robertson.
District No. 4—L. W. Kornegay.
District No. 5—A. B. Holmes.
District No. 6—John B. Wright.
District No. 7—John Q. Myers.
District No. 8—C. W. Banner.
District No. 9—M. R. Adams.
District No. 10—Jos. B. Greene.

The House of Delegates then adjourned.

MINUTES OF THE SECOND SESSION OF THE HOUSE OF DELEGATES

WEDNESDAY, APRIL 30TH, 1930, 4:00 P. M.

The second session of the House of Delegates was held in the West Parlor at 4 p.m., Wednesday, April 30th, 1930.

The House of Delegates was called to order by the chair. Dr. J. M. Parrott read the report of the Committee on the President's Message and President's Address which was unanimously approved and follows:

The Committee on the President's Annual Messages begs leave to submit the following report:

1. We hasten to congratulate both Dr. Crowell and the Society on the able address which he has presented. It is an outstanding document and richly deserves careful consideration by the members of the Society.

2. It contains several features which we would do well to emphasize, and the committee feels very strongly that its constructive measures, its stirring appeal for loyalty, and its call for service should be carefully and seriously heeded.

3. The committee is of the opinion that any one of the several thoughts which our President has forcefully and wisely presented to us could be emphasized to great advantage. There is, however, one outstanding recommendation which we believe should receive especial consideration. We refer to the establishment of a farm colony (and we use the term in its broad sense) for the treatment of "habit" patients. We are so strongly impressed with the desirability of this forward-looking measure that we definitely recommend and urge that this matter be referred to the Executive Committee and the Committee on Public Policy and Legislation for detailed investigation; and, further, we recommend that the chairman of the Executive Committee at an early and opportune time call a meeting of these two committees, together with the heads of the State institutions wherein "habit" cases are now treated, for the definite and fixed purpose of obtaining the needed legislation.

4. The committee is of the opinion that the subject matter contained in the President's message to the House of Delegates has already been handled by its reference to an appropriate committee and therefore does not deem it necessary to make further reference to it.

Respectfully submitted,

James M. Parrott,
J. Q. Myers,
Albert Anderson,
Committee.

Report of the Finance Committee on the Secretary-Treasurer's report was made as follows:

Audited found correct and approved, April 30th, 1930.

Dr. J. R. McCracken, *Chairman*
Dr. J. M. Parrott.

The Nominating Committee reported as follows:

President—Dr. J. G. Murphy.....Wilmington
President-elect—Dr. M. L. Stevens.....Asheville
First Vice-President—Dr. C. A. Julian.....Greensboro
Second Vice-President—Dr. J. W. Davis.....Statesville

Committee on Medical Society Foundation

Dr. J. P. Matheson, *Chairman*, 3 years.....Charlotte
Dr. M. L. Stevens, 2 years.....Asheville
Dr. L. B. McBrayer, 1 year.....Southern Pines
Dr. J. B. Sidbury, 4 years.....Wilmington
Dr. J. M. Parrott, 5 years.....Kinston

Committee on Obituaries

Dr. C. M. Van Poole, *Chairman*.....Salisbury
Dr. C. A. Julian.....Greensboro
Dr. McT. G. Anders.....Gastonia

Committee on Legislation

Dr. B. J. Lawrence.....Raleigh
Dr. T. W. M. Long.....Roanoke Rapids
Dr. Thurman D. Kitchin.....Wake Forest

Committee on Printing Supplies

Dr. L. B. McBrayer, *Chairman*.....Southern Pines
Dr. P. P. McCain.....Sanatorium
Dr. J. W. Dickie.....Southern Pines

Moore County Medical Society Medal

Dr. W. C. Mudgett, *Chairman*.....Southern Pines
Dr. J. M. Parrott.....Kinston
Dr. John Q. Myers.....Charlotte

Delegates to American Medical Association

Dr. Chas. A. Woodard, Wilson.....1930
Dr. H. A. Royster, Raleigh.....1930 and 1931
Dr. A. J. Crowell, Charlotte.....1930 and 1931
Dr. M. L. Stevens, Asheville.....1931 and 1932
Dr. Joseph B. Greene, Asheville, alternate for Dr. H. A. Royster.
Dr. L. W. Kornegay, Rocky Mount, alternate for Dr. A. J. Crowell.
Dr. C. W. Banner, Greensboro, alternate for Dr. M. L. Stevens.

Delegates to Virginia Medical Society

Dr. John Martin.....Roanoke Rapids
Dr. W. D. Rodgers.....Warrenton
Dr. W. C. Warren.....Williamston
Dr. C. B. Williams.....Elizabeth City
Dr. J. F. Nash.....St. Paul
Dr. G. E. Newby.....Hertford
Dr. B. C. Willis.....Rocky Mount
Dr. W. W. Sawyer.....Elizabeth City

Delegates to South Carolina Medical Society

Dr. O. L. McFayden.....Fayetteville
Dr. J. LaBruce Ward.....Asheville
Dr. C. H. Pugh.....Gastonia
Dr. H. W. McKay.....Charlotte
Dr. S. Raymond Thompson.....Charlotte
Dr. Alonzo Myers.....Charlotte

Place of Meeting: Durham

Time: Third Tuesday in April, 1931
April 20, 21 and 22, 1931

Chairman Committee on Arrangements:
Dr. Lyle S. Booker, Durham

Signed:
Joseph B. Greene,
John Q. Myers,
M. R. Adams,
Jno. B. Wright,
C. B. Williams,
J. F. Robertson,
W. E. Warren,
C. W. Banner,
A. B. Holmes,
L. W. Kornegay.

Resolution in regard to food faddists was introduced by Dr. Northington and on motion of Dr. Jno. B. Wright was laid on the table.

On motion of Dr. R. B. Davis a committee of three was authorized to be appointed by the incoming President and he to request that a like

committee be appointed from the State Hospital Association, which joint committee should be charged with the duty of investigating the matter of collecting hospital bills and professional fees in other states and report at the next session.

Dr. J. G. Murphy appointed the following committee in accordance with the above resolution: Dr. R. B. Davis, Greensboro, Chairman; Dr. Ernest S. Bullock, Wilmington; Dr. L. N. Glenn, Gastonia.

Dr. R. B. Davis, Secretary, made a report for the Council, stating that all Districts were functioning satisfactorily and no matter of appeal had come to the Council during the year. The officers for the year are Dr. H. D. Walker, Elizabeth City, President; Dr. R. B. Davis, Greensboro, reëlected Secretary.

No further business appearing on motion the House of Delegates adjourned sine die.

L. B. McBrayer,
Secretary-Treasurer.

PROGRAM

GENERAL SESSIONS, 1930

First General Session—Tuesday, April 29, 9:30 a.m. Ball Room.

Call to Order: Dr. W. C. Mudgett, Chairman Committee on Arrangements, Southern Pines.

Invocation: Rev. M. W. MacLeod, Pinehurst.

The President's Address: Dr. L. A. Crowell, Lincolnton.

Report of Committee on winners of the Moore County Medical Society Medal.

Presentation of Moore County Medical Society Medals:

1928 Session, Dr. Paul Pressley McCain, Sanatorium.

1929 Session,

Address (Invited Guest): Opportunity and Responsibility of Organized Medicine in connection with the so-called High Cost of Medical Care: Dr. Allen H. Bunce, Trustee American Medical Association, and Secretary Georgia State Medical Association, Atlanta, Georgia.

Address: Business In Medicine: Dr. Ernest S. Bullock, Wilmington.

Address: Representative from the North Carolina Dental Society—Is there a need for a closer coöperation between the Physician and Dentist? Dr. J. Martin Fleming, Raleigh.

Address: Representative from the North Carolina Dental Society—The Present Status of the Non-Vital Tooth: Dr. J. S. Betts, Greensboro.

Address: From Section on Practice of Medicine:

(a) Is Hypertension Acquired or Inherited?—Dr. William Allan, Charlotte.

(b) The Correlation of Observations made in Studies of Experimental Nephritis with Certain Clinical Conditions—Dr. William DeB. McNider, Chapel Hill.

(c) The Clinical Consideration of an Anemia of Pregnancy and the Puerperium: Dr. C. T. Smith and Dr. W. Bernard Kinlaw, Rocky Mount.

Second General Session—Tuesday, April 29, 8:00 p. m. Ladies' Card Room.

Report of Obituary Committee: Dr. C. M. Van Poole, Chairman.

Third General Session—Wednesday, April 30, 9:00 a. m.—12:00 m. Ball Room.

Address: From Section on Gynecology and Obstetrics, "Obstetric Analgesia," Dr. Charles Roberson, Greensboro.

Address: (Invited Guest): "Childhood Tuberculosis," Dr. F. Maurice McPhedran of Phipps Institute, Philadelphia, Pa.

Address: (Invited Guest): "Occlusion of the Coronary Artery," Dr. Ross V. Patterson, Dean Jefferson Medical College, Philadelphia, Pa.

Address: From Section on Eye, Ear, Nose and Throat, "The Practical Value of Bronchoscopy and Esophagoscopy in Diagnosis and Treatment," Dr. John B. Wright, Raleigh.

Address: From Section on Surgery, "Indications for Surgical Intervention in Duodenal Ulcer with Review of 34 cases," Dr. E. S. Boice, Rocky Mount.

Address—From Section on Pediatrics, "Pediatrics looks at Psychology," Dr. L. W. Elias, Asheville.

Fourth General Session—Wednesday, April 30, 8:00 p.m. Ball Room.

Report of Board of Medical Examiners.

Address: "Tuberculosis and Uncinariasis," Dr. C. D. W. Colby, Asheville.

Address: "Administration of Toxin Anti-Toxin," Dr. C. A. Shore, Raleigh.

Address: "The Vasomotor Disturbances of the Extremities," Dr. R. B. McKnight, Charlotte.

Address: "Post-Operative Pulmonary Atalectasis," Dr. Julian A. Moore, Asheville.

Report from the House of Delegates.

Presentation of 1930-1931 officers.

Presentation of President's Jewel.

Unfinished Business.

Adjourn Sine Die.

SECTION MEETINGS

SECTION OF PUBLIC HEALTH AND EDUCATION

TUESDAY, APRIL 29, 2:00 P. M.

BALL ROOM

Dr. K. P. B. Bonner, Morehead City, Chairman.

Symposium: The Relationship of Public Health and Education.

1. The Relationship of Education to Public Health: Mr. A. T. Allen, State Superintendent of Public Instruction, Raleigh.

2. The Relationship of Public Health to Higher Education: Dr. E. C. Brooks, President of North Carolina State College, Raleigh.

3. The Influence of Public Health and Education upon the Development of the Human Race: Dr. W. L. Poteat, President Emeritus of Wake Forest College, Wake Forest.

4. The Social and Economic Aspects of Human Ailments and Public Health: Dr. Chas. O'H. Laughinghouse, State Health Officer, Raleigh.

SECTION ON PRACTICE OF MEDICINE

TUESDAY, APRIL 29, 2:00 P. M.

LADIES' CARD ROOM

Dr. W. B. Kinlaw, Rocky Mount, Chairman.

1. Cancer of the Lungs: (Illustrated) Dr. Jos. L. Spruill, Jamestown.

Discussion by Dr. S. M. Bittinger, Sanatorium.

2. The Importance of an Early Diagnosis in the Treatment of the more common Chest Conditions: Dr. D. R. Perry, Durham.

Discussion by Dr. P. P. McCain, Sanatorium.

3. The Toxic Thyroid: Dr. William B. Dewar, Raleigh.

Discussion by Dr. Spencer P. Bass, Tarboro.

4. A Clinical Consideration of Intestinal Worms: Dr. Paul F. Whitaker, Kinston.

Discussion by Dr. C. D. W. Colby, Asheville.

5. The Diagnosis and Treatment of Eczema: (Illustrated) Dr. J. A. Elliott, Charlotte.

6. The Etiology and Treatment of Pellagra: Dr. Frederick R. Taylor, High Point.

7. The Diagnosis of Pellagra: (Lantern Slides) Dr. J. D. Hemmingway, Gastonia.

8. Is Hypertension Acquired or Inherited: Dr. William Allan, Charlotte, before First General Session, Tuesday, April 29th.

9. The Correlation of Observations made in Studies of Experimental Nephritis with Certain Clinical Conditions: Dr. William DeB. McNider, Chapel Hill, before First General Session, Tuesday, April 29th.

10. The Clinical Consideration of an Anemia of Pregnancy and the Puerperium: Dr. C. T. Smith and Dr. W. Bernard Kinlaw, Rocky Mount, before First General Session, Tuesday, April 29th.

SECTION OF EYE, EAR, NOSE AND THROAT

TUESDAY, APRIL 29, 2:00 P. M.

MEN'S CARD ROOM

Dr. V. M. Hicks, Raleigh, Chairman.
Dr. V. K. Hart, Charlotte, Secretary.

1. Chairman's Address: Personal Observations of the Cause and Prevention of Blindness in North Carolina—Dr. V. M. Hicks, Raleigh.

2. Osteomyelitis of the Frontal Bone: Dr. F. E. Motley, Charlotte.

Discussion by Dr. J. W. MacConnell, Davidson.

3. Observation on the Formation of the Macula Star in Nonrenal Cases: Dr. F. P. Calhoun, Atlanta, Ga. (invited guest of the section).

4. Lipiodol as an Aid to Diagnosis in Diseases of the Maxillary Sinuses: Dr. R. S. Beam, Lumberton.

Discussion by Dr. A. M. Whisnant, Charlotte.

5. The Indications for Enucleation in Traumatic Iridocyclitis: Dr. David S. Asbill, Statesville.

Discussion by Dr. J. G. Johnston, Charlotte.

6. Bilateral Extra-ocular Findings in Vincent's Angina of the Mouth—Case Report—Dr. H. C. Neblett, Charlotte.

Discussion by Dr. J. M. Lilly, Fayetteville.

7. Tumors of Pituitary Area: Dr. J. S. Norman, Hickory.

Discussion by Dr. F. C. Smith, Charlotte.

8. The Practical Value of Bronchoscopy and Esophagoscopy in Diagnosis and Treatment: Dr. John B. Wright, Raleigh, before Second General Session, Wednesday, April 30th.

SECTION OF GYNECOLOGY AND OBSTETRICS

WEDNESDAY, APRIL 30, 2:00 P. M.

BALL ROOM

Dr. R. A. Ross, Durham, Chairman.

1. Roentgen Pelvimetry: Dr. John Watkins, Asheville.

Discussion by Dr. J. Donald McRae, Asheville.

2. Descensus Uteri: Dr. Thomas D. Sparrow, Charlotte.

Discussion by Dr. Dave Tayloe, Jr., Washington.

3. The Behavior of the Kidney during Pregnancy: Dr. N. O. Spikes, Durham.

Discussion by Dr. Paul Neal, Raleigh.

4. Utero-Salpingography as an aid in Gynecologic Diagnosis: Dr. Donnell B. Cobb, Goldsboro.

5. Secondary Anemia of Pregnancy: Dr. Brodie C. Nalle, Charlotte.

6. Some Considerations of the Movable Kidney: Dr. W. M. Coppridge, Durham.

Discussion by Dr. Robert McKay, Charlotte.

7. The Endocrines in Obstetrics and Gynecology: Dr. Adlai S. Oliver, Raleigh.

8. Obstetric Analgesia: Dr. Charles Roberson, Greensboro, before Third General Session, Wednesday, April 30th.

SECTION OF SURGERY

WEDNESDAY, APRIL 30, 2:00 P. M.

LADIES' CARD ROOM

Dr. Albert W. James, Monroe, Chairman.

1. The Diagnosis and Surgical Management of Traumatic Rupture and Punctured Wounds of the Urinary Bladder: Dr. R. L. Pittman, Fayetteville.

Discussion by Dr. H. W. McKay, Charlotte.

Symposium on Anaesthetics:

2. The Choice of an Anaesthetic: Dr. F. Webb Griffith, Asheville.

3. A discussion of the Newer Anaesthetics: Dr. R. O. Lyday, Greensboro.

Discussion by Dr. H. A. Royster, Raleigh.

4. The Pancreas: Dr. Benj. J. Lawrence, Raleigh.

Discussion by Dr. V. S. Caviness, Raleigh.

5. Tuberculosis Empyema: Treatment by a Combination of Irrigation and Suction with Aseptic Paravertebral Thoracoplasty, Dr. Deryl Hart, Professor of Surgery, Duke University Medical School, Durham.

Discussion by Dr. P. P. McCain, Sanatorium.

6. Cervical Infection as a Cause of Pelvic Pathology: Case Reports, Lantern Slides—Dr. I. M. Proctor, Raleigh.

Discussion by Dr. B. C. Willis, Rocky Mount.

7. Report of a Series of Back Injuries: Dr. Raymond D. Pearson, Monroe.

Discussion by Dr. J. S. Gaul, Charlotte.

8. Prostatic Concretions—Report of Cases: Dr. C. B. Squires, Charlotte.

Discussion by Dr. W. M. Coppridge, Durham.

9. The Tannic Acid Treatment of Burns: Dr. T. M. Green, Wilmington.

Discussion by Dr. T. C. Bost, Charlotte.

10. Multiple Abscess of the Chest and Pyopericardium following Pneumonia, with demonstration of x-ray slides and the patient: Dr. W. B. McCutcheon, Durham.

Discussion by Dr. Deryl Hart, Durham.

11. Indications for Surgical Intervention in Duodenal Ulcer with Review of 34 Cases: Dr. E. S. Boice, Rocky Mount, before Third General Session, Wednesday, April 30th.

SECTION OF PEDIATRICS

WEDNESDAY, APRIL 30, 2:00 P. M.

MEN'S CARD ROOM

Dr. Thos. M. Watson, Greenville, Chairman.

1. Chairman's Address: The Common Cold—Dr. T. M. Watson, Greenville.

2. Infectious Mononucleosis or Glandular Fever in Children: Dr. Julian P. Price (Invited Guest) Florence, S. C.

Discussion by Dr. Aldert S. Root, Raleigh.

3. The Treatment of Empyema in Children: Dr. Julian A. Moore, Asheville.

Discussion by Dr. J. Buren Sidbury, Wilmington.

4. Infantile Paralysis, Emphasing the Orthopedic Care: Dr. Alonzo Myers, Charlotte.

Discussion by Dr. B. U. Brooks, Durham.

5. The Significance of Blood in the Stools of Children: Dr. S. F. Ravenel, Greensboro.

Discussion by Dr. LeRoy Butler, Winston-Salem.

6. Case Reports—Calcium Depositis from Overdosage with Activated Ergosterol: Dr. C. P. Mangum, Kinston.

Discussion by Dr. Marion Y. Keith, Greensboro.

7. Pediatrics looks at Psychology: Dr. L. W. Elias, Asheville, before Third General Session, Wednesday, April 30th.

CONJOINT SESSION OF STATE BOARD OF HEALTH AND THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

WEDNESDAY, APRIL 30, 12:00 M.

BALL ROOM

Members of the North Carolina State Board of Health

A. J. Crowell, M.D., President, Charlotte.

Cyrus Thompson, M.D., Jacksonville.

Thomas E. Anderson, M.D., Statesville.

E. J. Tucker, D.D.S., Roxboro.

D. A. Stanton, M.D., High Point.
James P. Stowe, Ph.G., Charlotte.
John B. Wright, M.D., Raleigh.
L. E. McDaniel, M.D., Jackson.
Charles C. Orr, M.D., Asheville.

Executive Staff

Charles O'H. Laughinghouse, M.D., Secretary and State Health Officer.
Ronald B. Winston, Assistant to the Secretary.
H. A. Taylor, M.D., Deputy State Health Officer.
C. A. Shore, M.D., Director State Laboratory of Hygiene.
G. M. Cooper, M.D., Director Bureau Health Education.
H. E. Miller, C.E., Chief of Bureau of Engineering and Inspection.
F. M. Register, M.D., Director Bureau of Vital Statistics.
George Collins, M.D., Director Bureau of Maternity and Infancy.
Ernest A. Branch, D.D.S., Director Oral Hygiene.
D. A. Dees, M.D., Field Assistant in County Health Work.
A. B. McCreary, M.D., State Epidemiologist.

Order of Business

Report of Work Accomplished and Recommendations.
Discussions.
New Business.
Adjournment.

WOMEN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Officers

President—Mrs. Gideon Hunt Macon, Warrenton.
President-Elect—Mrs. W. B. Murphy, Snow Hill.
First Vice-President—Mrs. A. B. Holmes, Fairmont.
Second Vice-President—Mrs. J. L. Spruill, Jamestown.
Third Vice-President—Mrs. D. W. Holt, Greensboro.
Treasurer—Mrs. R. F. Warren, Prospect Hill.
Recording Secretary—Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary—Mrs. W. D. Rodgers, Warrenton.

Councilors

First District—To be supplied.
Second District—Mrs. M. A. McCuiston, Kinston.
Third District—Mrs. L. C. Beard, Atkinson.
Fourth District—Mrs. L. M. Kornegay, Rocky Mount.
Fifth District—Mrs. Roscoe McMillan, Red Springs.

Sixth District—Mrs. Russell Perry, Durham.
Seventh District—To be supplied.
Eighth District—To be supplied.
Ninth District—Mrs. J. L. Sowers, Lexington.
Tenth District—Mrs. Allen T. Hipps, Asheville.

TUESDAY, APRIL 29

12:00 m.—Executive Board Meeting—West Parlor.

WEDNESDAY, APRIL 30

10:30 a. m.—Annual Meeting ("The Carolina") West Parlor.

PROGRAM

Mrs. Gideon Hunt Macon, *President,* Presiding.
Invocation—Rev. T. A. Cheatham, Pinehurst.
Welcome to Visitors—Mrs. J. W. Dickie, Southern Pines.
Response—Mrs. A. B. Holmes, Fairmont.
Minutes.
Roll Call.
Address—Mrs. Gideon Hunt Macon, President.
Unfinished and New Business.
Report of Officers.
Report of Councillors.
Report of Delegate to Auxiliary Southern Medical Association, Mrs. J. O. MacClelland, Maxton.
Address—Dr. James M. Northington, Charlotte.
Election of Officers.
Installation of President.
Adjournment.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWENTIETH ANNUAL SESSION

MONDAY, APRIL 28, 1930

Papers Limited to Twenty Minutes—Discussion to Five Minutes.

President—Dr. J. R. Hege, Winston-Salem.
Vice-President—Dr. D. E. Ford, New Bern.
Secretary—Dr. F. M. Register, Raleigh.

PROGRAM

9:30 A. M.—LADIES' CARD ROOM

1. Call to Order by the Junior Past President, Dr. C. C. Hudson, Greensboro.
2. Invocation—Rev. M. W. MacLeod, Pinehurst.
3. Introduction of Dr. J. R. Hege by Dr. Charles O'H. Laughinghouse.

4. President's Annual Address: Dr. J. R. Hege, Winston-Salem.

5. Report of Secretary Dr. F. M. Register, Raleigh.

6. Report of Special Committees.

7. Appointment of:

(a) Committee on President's Address.

(b) Committee on Visitors and New Members.

(c) Committee on Resolutions.

(d) Other Committees.

8. The Practicing Physician's Responsibility in the Matter of Public Health—Dr. C. W. Armstrong, Salisbury.

Discussion:

9. The School Nurse in a Generalized Nursing Program—Miss Willie Burt Fuller, Greensboro.

Discussion—Mrs. Karl B. Cline, Concord.

10. Tuberculosis Control applied to a North Carolina County—Dr. L. B. McBrayer, Southern Pines.

Discussion—Dr. C. C. Hudson, Greensboro; Dr. P. P. McCain, Sanatorium.

2:30 P. M.—LADIES' CARD ROOM

1. Health Activities in Industry—Dr. E. S. Thompson, Medical Director, R. J. Reynolds Tobacco Company, Winston-Salem.

Discussion—Dr. T. W. M. Long, Roanoke Rapids; Dr. E. E. Robinson, Concord.

2. The Opportunity and Duty of Women in and For Health: Mrs. Charles R. Whitaker, Chairman of Health, State Federation of Women's Clubs, and Vice-President North Carolina Tuberculosis Association, Southern Pines.

Discussion—Dr. John Symington, Moore County Health Officer, Carthage.

3. Record Forms, Charts, Graphs, etc. in a Health Department Office—Dr. R. L. Carlton, Winston-Salem.

Discussion—Dr. D. E. Ford, New Bern; Dr. J. H. Epperson, Durham.

8:00 P. M.—LADIES' CARD ROOM

1. Address—Dr. L. A. Crowell, President State Medical Society, Lincolnton.

2. Election of Officers.

3. Address—State Health Officer—Dr. Chas. O'H. Laughinghouse, Raleigh.

Adjourn Sine Die.

GENERAL SESSIONS

FIRST GENERAL SESSION

TUESDAY MORNING, APRIL 29, 1930

The first general session of the Medical Society of the State of North Carolina was called to order at the Carolina Hotel, Pinehurst, N. C., at nine forty-five o'clock, Dr. W. C. Mudgett, Chairman Committee of Arrangements, Southern Pines, presiding.

CHAIRMAN MUDGETT: The meeting will please come to order. The Rev. McLeod will say the invocation.

REV. MCLEOD: Our Father in heaven, we are grateful to Thee that Thou hast given us life; that Thou hast given to us the capacity to get together and enjoy a social good time. We thank Thee for all the pleasures we enjoy. We thank Thee that we are living in this day and generation and so many wonderful things are possible to us. We thank Thee for those who have devoted their lives to the discovery of the many things which were created by Thee thousands of years ago, and thank Thee particularly for this body of men who are engaged in the great work of medicine.

We thank Thee for their earnestness, for their sincere desire to know more and give it to mankind. We thank Thee for the great way in which they serve. We thank Thee that they enable us to keep the temple of the body better fitted for the work that we are called upon to do from day to day.

We thank Thee that they give themselves unselfishly to treating those who are unable to pay. We thank Thee they count not the cost. They only ask that they be allowed to serve.

We ask Thee now that Thy blessings be upon those who direct the policies of this organization, upon those who are assembled here and all their loved ones, upon their patients left behind, and upon Thy kingdom everywhere. We ask it in His name. Amen.

CHAIRMAN MUDGETT: The Moore County Medical Society is very much pleased to have the opportunity of entertaining the State Medical Society again, but we have spared you all addresses of welcome. I hope you will take it for granted that we are mighty glad you are here.

The President's address will now be heard.

President L. A. Crowell of Lincolnton (Applause):

Mr. Chairman, Brethren of the North Carolina Medical Society, Ladies and Gentlemen:

I would be guilty of the basest of all human faults—ingratitude—if I were not profoundly appreciative of the high honor conferred upon me in my election to the highest professional office within the gift of the medical profession of our State. Had this distinction come to me earlier in life, I should doubtless have prized it more largely for the honor which it carries; but, coming as it did, at a later period and in a more mature stage of my professional career, I have valued it as a sin-

cere expression of the esteem and regard of my fellow doctors, and as an opportunity for service to our noble profession.

I shall offer no excuses for my service to our splendid organization; because I believe with Elbert Hubbard, that it never pays to apologize for one's failures—our friends require no apologies and our enemies never believe us anyway. Suffice it to say that if I have fallen short of the high ideal of service to which I have sought as your President to attain, it is because of my lack of ability to measure up to the demands of the important position rather than to any lack of interest in our common objectives.

In the discharge of my duties as President of the North Carolina Medical Society, I have been privileged to come into a close contact with my brother doctors and have enjoyed a wonderful opportunity to know more intimately the rank and file of our profession. I have learned much of the medical men of our State and their activities. It has been a liberal education to me. I hope that I shall be able to put to full use the information I have gathered for the further advancement of our profession in an approach to the ideal I dare hope for.

My official duties and activities have not only familiarized me with the personnel of our profession; but my journeys over our great State have given me a broader and clearer conception of the greatness and standing of this commonwealth of ours. North Carolina, during the past twenty-five years, has forged to the very fore-front among the states of this nation, and occupies today a proud position in our national life.

It seems to me that in a great, rich, populous, prosperous State like ours, rich in resources and richer in citizenship and traditions; with a medical profession that is able to take its place among the country's best, there should be built up a professional organization that would be the pride, not of our doctors alone, but of the State at large. With this in mind, I have directed my efforts toward arousing within those groups with whom I have come in contact a keener spirit of professional loyalty and a higher conception of our professional idealism. I give it as my honest and candid opinion that the greatest need of the medical profession of North Carolina today is the building up and development of our local and State professional organizations, not for the advancement or protection of the selfish interests of any individual or group, but to keep alive within our ranks the spirit of professional pride that is so essential to success in any field of endeavor.

We can never build up in North Carolina a great medical profession by the acquisition of scientific knowledge, important as that may be. We can never raise our profession to the sublime heights it should attain merely by the expansion of intellectual training, necessary as it is. The medical profession, if it is to preserve its sacred traditions and maintain its lofty ideals, must keep alive and aloft the noble ideal of service which has inspired it in the past and must sustain it in the future.

It seems to me that in the building up of a bigger and better professional organization in our State, three distinct things are essential. First, we as physicians must give to our professional organizations a larger degree of loyalty and faithful service. Second, we should seek

through our organization and its activities to create higher professional ideals and more lofty standards of professional conduct. Third, the efforts of our associations should be directed toward improving the equipment and training of our medical men.

No institution or organization can thrive and flourish, unless it has from the hands and hearts of all those connected with it, the most absolute and complete loyalty. There are in North Carolina approximately 2300 licensed doctors, yet out of this number only about 1700 are members of any medical organization, and only an average of 646 of these have attended the State Medical Society meetings for the past three years. This very fact would be interpreted by the laity to mean that the doctors themselves are not sold on their profession and its activities. Many county and local organizations enroll only a small per cent of the members of the profession, and a large number of medical men go months, and perhaps years, without attending a professional meeting. This situation is dangerous and deplorable, not only because it advertises to the world the indifference of our men to their profession, but because any organization is in more danger from indifference and disloyalty within its ranks than from attack from the outside.

Those on the inside, who enjoy the protection and confidence of an organization, may be instrumental in bringing about its downfall. History abounds in such examples. Many worthy endeavors have come to grief and disrepute because of the damaging influence and unworthiness of a few people connected with them. The church of God is often handicapped in its crusades for righteousness by the unseemly conduct and cold indifference of its own members. A man's most dangerous foes may, indeed, "be they of his own household."

Speaking as one of the older members of our Association, I want to strongly urge the young men of our profession to give themselves more completely to our organization and its activities. Our profession is one of the very oldest and certainly one of the noblest known to man. For thousands of years medicine has united the aims and aspirations of the best and noblest of mankind; and, as Pasteur said, "the future belongs to those who shall have done most for suffering humanity." Descartes said, "If ever the human race is lifted to its highest level intellectually, morally, and physically, the medical profession will perform this service." Ours is a noble heritage, which is neither surpassed nor equalled by any other line of human activity.

It is indeed a wonderful thing to be a medical man. It is a high privilege and responsibility to be in a position to minister to the physical and mental ills of mankind; to have a part, no matter how small, in the improvement of humanity. The doctor, like the Great Physician, is privileged to go about doing good, relieving suffering, cooling the fevers of the diseased, easing the pain and allaying the fears of the distressed. He, to an extent not enjoyed by those of any other profession or vocation, finds on every side opportunities for service and fields for useful endeavor. It is ours to soften the pillow of pain, and put a velvet glove on the iron hand of Death. It is ours to kindle hope in the hearts of the hopeless. We stand at life's opening gateway and give welcome to the new born babe; we guide the faltering footsteps through the perils

and pitfalls of childhood and youth. We let the departing down softly into the shadow that never lifts. We are admitted, as none other, into the secret sorrows of the home. We, as no other save the minister of God, tread faithfully in the footsteps of the Man of Galilee, the "Good Physician," from whose tender touch the cohorts of disease fled away. It is because of this sacred trust that it behooves us to glorify and maintain the exalted character of our calling. Should we not then count it a high privilege to dedicate our energies and consecrate ourselves in loyal service to our profession and its organized activities?

I would not be true to myself and to the opportunity which this occasion affords, if I did not urge upon you the necessity for promoting in every way the ideals of our profession. An organization, like an individual, can rise no higher than the ideals which actuate and inspire it. A profession like ours that deals in human and spiritual values must at all times magnify its ideals and elevate its aspirations. It seems to me then, that the greatest asset a medical man may have is a passion for service that drives him on to the development of his resources and to the employment of his ability, to the end that those who trust him and rely upon his skill, may have no cause to regret their choice.

How wonderful it is to be living in this scientific age of medicine and behold such an imposing panorama! What a glorious vista presents itself to the young and active minds just ready to enlist and begin service in this army of progress which has as its goal the abolition of suffering and perpetuation of happiness. Even the most imaginative halt with awe.

But professional pride alone is not enough. In fact, pride of itself is a weakness and not a virtue. Unless it leads us to give ourselves completely and unselfishly, it will, as the Bible teaches us, but mean our destruction. Family pride is a worthy and laudable trait so long as it inspires a man to exalt and elevate his life so as to reflect credit upon the name he bears. How pitiful is the doctor, who, knowing the greatness of his profession, conscious of her past and alive to her future, fritters away his time and his opportunities and fails to do his best to qualify himself for service.

Each year thousands of young men enter the colleges and universities of our country. Many fondly hope that some day they will represent their school in some inter-collegiate contest. But before they can qualify for this coveted honor, they must endure the grind of the training field. They must deny themselves much of the freedom and pleasure their fellows have. They must develop skill and endurance which comes from constant training and temperate habits. The same is true in our professional life. No man can hope to attain a position of prominence and leadership in his chosen field unless he has, through labor and sacrifice, prepared himself for it. "Heights by great men were not attained by sudden flight. But they, while their companions slept, were toiling upward in the night."

What are some of the practical ways by which we shall show our pride to our profession? By attending medical meetings wherever they are held, and taking part in the programs. No doctor should be too busy to attend medical meetings. In fact, you will find that the busiest men

attend most regularly. It is highly important that the older men should keep up their attendance and thereby keep alive their interest in the profession and its activities. One of the surest ways of growing old prematurely and of losing one's usefulness is to fall behind the procession and believe that you are too old to learn.

It is an inspiration to study the lives of men like Rockefeller, Ford, and Edison. These men are still actively at work in their respective fields and they are as keen to learn new things as they were at fifty. Age, after all, is a relative thing. Some men are young at seventy, while others are old at forty. You older men have a wealth of knowledge which has been acquired through long years of experience. It is a veritable treasure which you have stored up through the years. Keep it and guard it, but above all, add to it. A man's talent is of value to no one if he buries it. He can add to it only by using it, and in so doing, his own happiness and the sum total of human enjoyment is increased.

To the young man life offers unlimited possibilities. Youth has been called the Springtime of life because a man is more alive during this period than at any other time of his life. He is more alive to his duties and opportunities, or should be. A young man should be prepared to embrace every opportunity that comes to him. Young men, line up with your fellow doctors; attend your society meetings and make every possible contribution to their success. You can be real leaders in your professional and community life if you will cultivate your ability to express yourselves by reading papers, making talks and aiding the societies in their work in every way you can.

Your profession is your greatest asset and you should lose no opportunity to invest in it. The investment should consist of both money and time. Time is the most precious thing that we have, and yet many of us are extravagant and uneconomical in the use of it. No professional man has time to engage in street-corner loafing or association with crowds in the market-place. If he does this to the neglect of his professional reading and study, he will awake sooner or later to find that he has suffered irreparably from it. It was Ruskin, who, in one of his splendid books, deplored the fact that people spend their time talking with kitchen maids and stable boys, when they might, through the medium of literature, associate and converse with the kings and queens of the earth. What a change would take place in the medical profession if every doctor would give unsparingly of his time and energy to professional study and medical research. The field of medicine is so immense that even the most ambitious can never encompass it entirely. Even the most diligent and brilliant can only slightly scratch the surface.

Every physician owes it to his patients and to himself to keep up in so far as it is possible with the advances in medicine. It is said that if a physician neglects this even for the short period of six months, he is incapable of intelligently practicing medicine and his attempts to do so may be considered almost criminal.

There are times when the best financial investment you can make is to spend a few hundred dollars in attending clinics; and such an investment will pay the largest dividends in dollars and cents, to say

nothing of the increase in your capacity for service which should be your greatest reward.

We frequently see doctors whose desire to make money causes them to neglect their profession. They may succeed for a while and may accumulate money. This money they usually invest in various enterprises, such as banks, manufacturing concerns and the like, about the business of which they know little or nothing. All goes well until one day the bank or business concern breaks and sweeps away the savings of a life time. Thus, they find themselves in middle life with their worldly possessions gone, their professional ability impaired by neglect and their practice taken from them by men who have kept their eyes on the ball.

The farmer who takes everything from his fields and fails to invest a part of his income in building up the fertility of his farm, frequently finds himself in his old age with a run down plantation that will not support him. Likewise, the doctor who fails to use a part of his earnings to learn and better qualify himself for service, but rather invests his money in various business enterprises, will likely find himself in his later years with a run down practice that will not render a sufficient return for his livelihood. As Osler said: "Gray matter is the only gold mine the physician should invest in."

I would like just here to express the belief that the doctor's preparation should include, in addition to his academic and professional training, some knowledge and understanding of business affairs and dealings. There are certain business principles which physicians should adhere to if they are to do justice to themselves and maintain the respect of their fellow men. The medical profession as a whole has not impressed the public with its business ability, and for that very reason, it has been and is now being greatly imposed upon. We find many doctors who are scarcely able to make a good living; and frequently, the doctor's death reveals the fact that his financial affairs are in bad shape. Their creditors say they should have collected more money when young and active, and when they were enjoying a good practice. Promptness in collection will help any doctor. He will find it much easier to collect soon after doing the work, and it is a good practice to let your patrons know that you expect settlement of your accounts. Human gratitude is frequently short lived, so that late attempts to collect bills may arouse animosity even from those formerly most effusive in their thanks. People I have the least patience with are those, who through the appeal of personal friendship, attempt to get the services of their medical attendant at the lowest price possible. People of this kind have a peculiar idea as to what the word friendship really means. If you are a friend of an individual, you will use your influence to help him rather than impose on his generosity by asking him to do something for nothing.

I do not mean to imply here that a doctor should not do charity work. I think that he should, and the application of better business methods will enable all of us to get in shape to do more of this work. We should be careful to define charity work; and to differentiate between real charity and the imposition of people who have the money for everything but the doctor's bill.

I wish that I were able to pay a worthy and fitting tribute to the general practitioner. I believe that the general practitioner makes up the first line of defense in our great professional army. It is upon the family doctor that we must rely for the care and counsel that is so necessary in successfully protecting and safeguarding the health of our people. There is talk about the passing of the old family doctor. I have little patience with this sort of sentiment. If the family doctor passes it will be because he refuses to be a family doctor and insists on becoming a specialist at the first opportunity. *The Lancet* recently headed one of its editorial columns with an editorial entitled "The Renaissance of the General Practice." It is very gratifying to know that a journal of this type still has faith in the general practitioner. One of the best indications of the soundness of the practitioner's position is that bright young minds are still attracted into its ranks. Many promising young medical students have assured me that their highest ambition is to do general practice. This they consider the noblest field in medicine and the place they can do the most good. But it is no place for a man who is afraid of work. We should appreciate the general practitioner more and more and realize that his work is full of difficulties and trying experiences. Those having the advantages of hospitals equipped to the last word and metropolitan laboratories can little appreciate the improvisions and ingeniousness which must characterize every day of the general practitioner's life. The vicissitudes of his life are not equalled by those of any other medical man. The specialist has a definite place, but I would fear for the future of medicine if the Genus "General Practitioner" should become extinct. There is every reason why the specialist and the general practitioner should work together in harmony, each aiding the other.

I deplore the tendency of so many young men going into specialism too soon. There is no finer preparation for a special field than three to five years' experience as a general practitioner. It is in this experience that a man has almost boundless opportunity to study the human mechanism, to observe the relationship between the different parts of the body and their reaction to different kinds of treatment. The profession needs more bright, capable men as general practitioners, and no greater opportunity awaits the young man who decides to thoroughly prepare and equip himself for work in this field.

At this point, I should like to deplore the apparent passing of prescription writing in the practice of medicine. Recently, especially during the past few years, the market has been flooded with various concoctions of commercial houses supposed to be good for every ailment to which man is heir. Many doctors, I am sorry to say, are falling into the slovenly habit of prescribing such hodgepodge without knowing or apparently caring anything about what are the ingredients and therapeutic actions, accepting blindly, as a layman would, the claims on the label. Can it be that prescribing treatment through pharmaceutical preparations is becoming a standardized project on a standard scale? Surely medicine must not become a sort of rule-of-the-thumb trade. Such practices are certainly not consistent with the intelligent practice of medicine, and should be discouraged.

As long as drugs are given, and as long as the Deity makes each human distinctly different from every other individual, there will be need for the thoughtful physician who will sit down by the bedside and compound a prescription composed of drugs which will meet the indications of that specific case, based on an understanding of the underlying pathological processes.

By the above, I am not condemning the standardized products of reputable drug houses, which are of recognized and proved value. Some of the pharmaceutical houses have very materially contributed to the modern advance of medical science.

There is need also for the investigation of many surgical and electrical appliances which now flood the market, often to the bewilderment of the doctor. There is need for some agency, such as the Council of Chemistry and Pharmacy of the American Medical Association, to ferret out the good in these and eliminate the bad, so that the average physician may intelligently select from them. I refer in particular to the many mechanical substitutes for sunlight which ambitious manufacturers are constantly keeping before our attention.

It should be the duty of every member of the medical profession to do his utmost to promote the provision of adequate facilities for the care and treatment of all diseased and unfortunate people of our State.

It is my opinion that our State needs today an institution for the care and treatment of whiskey and drug addicts. It seems to me that the prevalence of these awful scourges is sufficient to demand the attention of those leaders who are laboring for the advancement of our people along every good line. The United States Government is now planning to erect two such institutions in this country, one in the north and the other somewhere in the south. I do not think that we should wait for this to develop, but should immediately purchase a good farm, say about five hudred acres, in a good farming section, and erect upon it buildings suitable for the care of these people. They should be kept confined there and treated until able to do physical labor. They should then be detained on the farm and kept busy at interesting and healthful work until pronounced safe to be turned loose on their own responsibility.

If this were done, it would greatly relieve the medical profession of both responsibility and untold annoyance. Frequently these poor unfortunates, especially the drug addicts, by getting the sympathy of the doctor, cause him to prescribe for them; thereby rendering himself criminally liable. This responsibility should be assumed by the State and not by the medical profession, as such cases should be State charges and treated in the same manner as the insane and other abnormals are cared for.

About fifteen years ago Edwin Markham asked this question in poetic verse in reference to the drug addict:

> Who are those haggard hosts
> Groping the roads of the earth—unburied ghosts—
> Pale youth and tottering age, a spectral throng.

By some invisible master lured along?
O, Heaven, is there no prayer with power to swerve
These sad mad captives from the Fiend they serve?

This question is still being asked.

At this point I should like to say a few words about North Carolina's excellent Board of Health and pay a tribute to its activities. The North Carolina State Board of Health, the twelfth Board of Health to be established in the United States, was established in 1877, as a result of the vision and efforts of Dr. Thomas Fanning Wood, of Wilmington. Its advance and progress were rapid, but it had its mountains to climb and opposition and difficulties to overcome. The name of the late Dr. Richard H. Lewis stands out among those whose service to the Board has been invaluable. We will never know the consequences of the foresight of Drs. Wood and Lewis, and the immense amount of work of other men who have been connected with the Board from its beginning to the present time, the hosts of lives and the millions of dollars it has saved the State and its citizenry, and the pain and sorrow it has forestalled. The history of North Carolina's Board of Health since 1919, verified by facts and figures, reads like fiction. Its activities became so numerous and so versatile, its influence upon the physical and material advancement of the State had by this time become so potent and powerful for good that organized medicine in North Carolina, in coöperation with the Board, undertook to bring about definite policies and mutual understanding between the profession and the Board of Health, the one with the other.

We need a closer coöperation between the Board of Health and the medical profession of this State. The best way to obtain this is first of all to have the Board of Health confine its activities to the dissemination of health and preventive medicine propaganda to the public, and leave to the private physician the job of treating and curing the sick.

No health program should be instituted in any county until the medical society of such county has been consulted and its full coöperation and support obtained. No health program can operate efficiently without the whole-hearted coöperation of the general practitioner whose training has made him the logical backbone of any public health program. No health officer should express by word or deed anything that would discredit the general practitioner.

I am well acquainted with the personnel of the Board of Health. Most of these men have been general practitioners themselves and are thoroughly familiar with the difficulties and tribulations of the general practitioner. They have assured me that no policies of the Board shall encroach upon the rights and privileges of the practitioner.

If the medical profession of this country is to maintain its exalted position of respectability and dignity that its importance demands, we should see to it that medical matters are supervised by medical men. It seems to be the rule in our State to allow no physician to serve on any board, commission, or committee, when the thing to be governed is composed partially or wholly of matters which are peculiarly in the

knowledge of the medical profession only, and which cannot be had from any other source.

Hospitals are today controlled not by medical, but by lay boards. Men of vast wealth are spending their declining years lecturing to the medical profession attempting to advise about matters of which they know little or nothing. Many times, men whose prime object in life has been to amass a great fortune, have been more or less failures in other lines of human endeavor.

It is a wonderful thing to have with us those who have been able to amass fortunes, and then have been generous enough to donate them to the betterment of humanity; however, if they desire to promote the interests of the masses of the population in health and medical matters, they should leave the handling of these funds, partially at least, to the judgment of the medical profession.

We should have had representation on the Workmen's Compensation Act. This would have been a distinct benefit to the Commission. The Commission took cognizance of their dependence on the medical profession and asked that the president of the North Carolina Medical Society call a meeting of his cabinet to meet with the Industrial Commission for a conference. At this conference the Commission requested that a committee be appointed to confer with them and advise with them from time to time, which was done. Our by-laws provided no machinery by which this conference could be held and the appointment of this committee had, but it seemed necessary that we comply with their request, and we did it.

The medical profession should resent the idea of being dictated to, hired and fired by philanthropists, insurance companies, and other lay organizations. We need men, courageous men, to marshal our forces; men as someone has said of the type of Roosevelt; a Mussolini, without his objectionable qualities. If we do not assert ourselves, I would fear to predict what the status of the medical profession will be in a decade from now. We have been too much absorbed in looking after the scientific part of medicine and therefore have neglected the material interests of our profession.

To those who have been soliciting and doing contract work, I would like to cite Article 6, Section 2, of the Constitution and By-Laws of the North Carolina Medical Society, which reads as follows:

> It is unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient or which interfere with reasonable competition among the physicians of a community. To do this is detrimental to the public and to the individual physician, and lowers the dignity of the profession.

Contract practice is unfair to the patient because it imposes upon him the services of a physician he does not want. At the same time, it is unfair to the physician himself, who should not care to work for those who do not want him. Furthermore, the personal touch that should exist between the patient and the doctor is entirely gone. This in itself one might call confidence, which is a wonderful thing and

contributes much to the cure of a sick person. No intelligent individual, or group of individuals, will submit to such a plan for any definite length of time, and this is going to make it necessary to re-write certain sections of the Workmen's Compensation Act, if this Act is to operate smoothly.

May I urge you in conclusion to keep alive and aloft the ideals of the medical profession? I know that a great deal is said today about service; but it does seem to me that service is indeed the ideal of our profession. The manufacturer deals with raw and lifeless material, and the artisan with inanimate things, but the doctor touches in the most intimate way life itself. He sees the procession of life march by, and in this group he beholds the lame, the deaf, the blind and the diseased. To the medical man who has kept alive within him the ideals of his profession all this is a challenge to apply himself with renewed energy and vigor to the study of medical science to the end that deaf ears may be made to hear; that sight may be restored to blind eyes, and that the lame may be made to leap and run. We cannot, like the Great Physician, raise the dead to life, but if we apply ourselves to the great problems of our profession, we can accomplish much in His name.

Somewhere in literature is the story of a young man who longed to become a great artist. He apprenticed himself to one of the masters of his day and applied himself diligently to the tasks before him; but try as he would, he could not rise above mediocrity.

One day as he sat alone in the studio, he felt the spirit of the master glow within him. Taking his place before the canvas, he began to paint his dreamed-of masterpiece. But when the picture was about half done, the spirit left him, and he could go no farther. Discouraged and overcome by his failure, he laid aside his brushes, and dropping his head upon his arms he fell asleep. While he slept, the old master entered the room, and seeing his sleeping pupil before the unfinished picture, he caught the meaning of it all, and tiptoeing quietly across the room, he seized the brush and with a few deft strokes of his skillful hand left just the impress that was all the pupil needed to finish the picture and realize his life's ideal.

So it may be with us. We may fall short of our coveted goal. We will never quite accomplish and realize our ideals, but if we are faithful, we may be sure that when we come to the end of life and fall asleep that the Master of all good workmen will add the last loving touch to the picture we have started, and thus complete in glorious perfection the masterpiece of our life's work.

When earth's last picture is painted, and the tubes are twisted and dried,
When the oldest colors have faded, and the youngest critic has died,
We shall rest, and faith, we shall need it—lie down for an aeon or two;
Till the Master of all Good Workmen shall set us to work anew!

And those that were good will be happy; they shall sit in a golden chair;
They shall splash at a ten-league canvas with brushes of comets' hair;
They shall find real saints to draw from—Magdalene, Peter, and Paul;
They shall work for an age at a sitting and never be tired at all!

And only the Master shall praise us, and only the Master shall blame;
And no one shall work for money, and no one shall work for fame;
But each for the joy of the working, and each in his separate star,
Shall draw the Thing as he sees it, for the God of Things as they are!

Dr. T. E. Anderson, Statesville: With me preëminently silence is golden, yet I want to assure the President that his address maintains the high standard hitherto attained by presidential addresses. I would not be indulging in hyperbole were I to say he has elevated the standard, but I believe Dr. Crowell will go down to his house justified if I assure him he has maintained to the highest degree the standard hitherto maintained by Presidents of this Society.

The only criticism in the world that I have to offer of the admirable and most comprehensive address, is his statement that some men are young at seventy. He seems to have limited youthful exhibitions to seventy. (Laughter).

Dr. F. R. Harris, Henderson: The Lord asked King Solomon what he desired most. "I will grant you anything," He said.

Solomon said, "Lord, give me an understanding heart."

I think our President has sought the Lord, and from what we have heard this morning, he not only has an understanding heart and a listening ear, and, brethren, if you have listened as I have done, it is an inspiration to hear such an address. Not only in medicine, but any line of endeavor, if we will observe the rules laid down by him today, we will go to the top of the ladder in any line, but it is for us, the noblest profession there is, particularly and peculiarly appropriate.

If we will accept his advice and obey his instructions we will be even greater than we have been in the past. I want to lay the laurel wreath on his brow and on the brow of all my brethren. I thank you. (Applause).

Dr. Albert Anderson, Raleigh: I want to say just a word by way of endorsing what my friend has said, and also what my good friend, Dr. Harris, has said. This is a most admirable address and timely. I especially want to commend one thing in the President's address: that is the suggestion on the part of the President that North Carolina establish an institution with plenty of land (he suggested 500 acres) for a class of people that I know something about. I hope we will emphasize this part of his address so that it will be called to the attention of the authorities convincing them of the necessity of establishing this farm. At the proper time we want to discuss this point. I just want to compliment the doctor on his fine thought, to congratulate him on the inspirational impulse that he has had in his office to do some good things during the year.

I have come in contact with him as he has gone up and down the State. I saw that his heart was in it, and you see what a spiritual flavor he has given the entire address. We sought him out for this high office. I know he never thought of it before. When this great office comes to a man like Dr. Crowell and he gets this high, spiritual note to bring to us in such a fine address, we feel that we have certainly succeeded in finding the right man for this office. (Applause).

Dr. L. B. McBrayer, Southern Pines: Mr. Chairman, at the House of Delegates last evening, a committee was appointed to consider the President's message to the House of Delegates and his address this morning. That committee is composed of the following past presidents: J. M. Parrott, Chairman; John Q. Myers, and Albert Anderson. The address will automatically go to this committee for any report it may care to make.

AWARD OF MOORE COUNTY MEDICAL SOCIETY MEDAL

Chairman Mudgett: I have been requested to say something about the Moore County Medical Society medal. About four years ago the Moore County Medical Society set aside a sufficient amount of money, the income from which was to be used for the purpose of a medal to be given to the man presenting the best paper at the State Medical Society, a paper which would show original work. This was designed to stimulate the production of papers demonstrating some original work, if possible.

There are two medals to be given this year. The method of selection of the winner is very important, and I want to urge the chairman of the Sections immediately upon the opening of their Section meetings to appoint committees of three who will select from the Sections the best papers, the papers to be submitted to the general committee of the Society for their final selection of the winner.

As I have said, there are two medals to be conferred this year, one for the year 1928 to Dr. Paul Presley McCain (applause) on "The Diagnosis and Significance of Juvenile Tuberculosis." The other is for 1929, to Dr. A. B. Holmes, of Fairmont, on "The Treatment of Uremia."

Let me urge again that the Section chairmen appoint these committees because that accounts for the delay in Dr. McCain receiving his medal promptly. We want this to be always a fixture of the opening session of each annual meeting.

President Crowell: I would like Dr. McCain and Dr. Holmes to step forward. I will ask Dr. J. M. Parrott to make the presentation of these medals. (Applause).

. . . Dr. McCain and Dr. Holmes approached the rostrum . . . (Applause).

Dr. J. M. Parrott, Kinston: Gentlemen of the State Medical Society: The importance of this matter is my excuse for asking your very careful attention to the few remarks which I feel impelled to make. If the gentlemen in the rear of the house cannot hear, I should be pleased to move closer to the center of the room. Otherwise, it would better suit my convenience to stand here. I am going to ask the gentleman at the door to be kind enough to close the door after getting everybody in. What I shall say will be said well enough amply to justify your coming in and hearing it. (Applause and laughter.) After you have heard it, and you feel you have not been recompensed for your trouble, just come up and try your hand at the job and see if you can do it better. (Laughter).

The awarding of this medal each year should be an event in the meetings, an outstanding event. It was wonderfully kind, it was wonderfully foresighted, it was a species of the highest type of professional statesmanship because it was constructive in thought on the part of the Moore County Medical Society to award a medal for the best paper presented to this organization at the annual meetings. I know of nothing that will do more good to stimulate the high-born purposes and splendid activity of an unselfish type than the awarding of this medal because, I remind you, it is based not particularly upon personal excellence as it is upon unselfish service to humanity and the profession which the activity of the winner guarantees.

The method of award has been explained, I think, sufficiently well by my distinguished friend, the chairman of our committee, Dr. Mudgett, but lest someone not understand it perhaps I may be pardoned and will be, I am sure, if I reiterate what he has said for purposes of emphasis so as to get over the idea.

The general committee that has charge of the awarding of the medal thought and think that the wisest way would be to throw it back into the Sections so far as possible, and hence in accordance with this general idea, the chairman of each Section is expected at once on the convening of the Section to designate three as members of a committee whose purpose will be to select from that Section the best paper presented to that Section at that meeting and give the information as quickly as possible to the Secretary or to Dr. Mudgett so that later in the year the General Committee can take these respective selected papers from the various Sections and in turn select from those the best paper that has been presented. We think that is a fairer and surer way of awarding the medals.

It was not so well understood last year. The Sections did not get to operating on the matter so there was some delay in awarding one of these medals, but I am happy the delay occurred because we have with us not one victor whom we can honor this morning, but two. It is a happy combination. On the one hand, my scientific friend, Dr. McCain, than whom there is no greater, in my opinion, in the United States in his particular line of work. (Applause).

Then, on the other hand, we have a victor from out in the woods, a man who has learned the fine art of taking out of the practical side of life the great gems that are really worth while and has done so and we have with us today a general practitioner who alone and single-handed meets the issues of the hour and meets them wisely and well, than whom, in his line of work there surely is none greater in all the Southland. (Applause) I refer to my friend, Dr. A. B. Holmes.

I would ask these gentlemen to arise, not for the purpose of demonstrating good-looking men (laughter), because you have that demonstration now (laughter), but that you may see the victors in this great race which we are running.

Dr. McCain and Dr. Holmes arose. (Applause)

Dr. Parrott: Dr. Holmes, it is a great pleasure to me to present to you this evidence of your superiority in the year 1929.

Dr. McCain, it is a great pleasure to me to present to you this evidence of your superiority in the year preceding.

To the splendid group of champions in the right, victors in life's race, who have made life worth while, it is a sincere pleasure to me to welcome you. I salute you. (Applause)

Dr. McCain and Dr. Holmes were presented with the medals.

President Crowell: The first paper on the program is "Opportunity and Responsibility of Organized Medicine in Connection with the So-called High Cost of Medical Care."

I will ask Dr. McBrayer to introduce Dr. Bunce.

Dr. L. B. McBrayer: Mr. President and Gentlemen: Those of you who were here a year ago remember Dr. Bunce quite well, and the splendid paper he gave us. At that time he was Vice Speaker of the House of Delegates of the A. M. A., and he has been promoted since and is now a member of the Board of Trustees of the American Medical Association, and is sent to us as such. He is also Secretary-Treasurer of the Georgia State Medical Society and many other things that are too numerous to mention. It goes without saying to anyone who knows him that there is nothing too good for Dr. Allen H. Bunce. It is a great pleasure to present Dr. Bunce to this audience.

The audience arose and applauded.

ORGANIZED MEDICINE AND THE COST OF MEDICAL CARE

Allen H. Bunce, M.D., Atlanta, Ga.

North Carolina is especially dear to me because on the banks of the Pee Dee River was born my great-great-grandfather who grew there to manhood, married a young woman from North Carolina and not until the birth of their second child did they emigrate to Georgia to settle on the banks of the Ogeechee River. After the outbreak of the Revolutionary War he organized a company of Georgia militia and again came to his beloved Carolinas where he served as Captain of his Georgians under General Francis Marion for whom he later named one of his sons. William Cone now lies buried on the banks of the Ogeechee where a simple monument lately erected by the Daughters of the American Revolution marks his grave.

Having therefore a filial devotion for North Carolina I love to feel that I am a part of your wonderful Medical Society. A Society which was founded December 23, 1799; showed its interest in medical research by offering a prize for the best essay on "Symptoms, Nature and Cure of Dysentery" in 1800; examined Charles Smith as to his qualifications to practice medicine on December 1, 1800, thereby establishing the precedent in America of examination for license to practice medicine; appointed a committee to found a botanical garden and medical library in 1801; and debarred patented and secret remedies in 1849. In the same year President Edmund Strudwich of Hillsboro advocated educating the public as to the value of autopsies, a procedure that we might well carry on today with value to ourselves and the public. On May 11, 1852, it adopted an important report on medical

education as follows: "Your committee is forced to believe that a few good, well-endowed, well-supported medical colleges, independent of favor will effect far more real and substantial good for the science of medicine than an illimitable number of such as your society have now the means of establishing." What prophetic vision! In 1859 it established a Board of Medical Examiners, being the first State in the Union to do this; and in the same year, divided the State into medical districts and urged that "periodical district meetings be held," thus antedating this policy of the American Medical Association by nearly half a century.

A society with such a heritage confers the highest honor on any member of the profession by inviting him to appear before you and I am pleased to comply with the request of your secretary to present a brief discussion on "Organized Medicine and the Cost of Medical Care."

Organized medicine has wonderful opportunities as well as grave responsibilities in furnishing medical care for the people. Every sick person should have the benefit of present medical knowledge. If this is to be furnished by organized medicine it is the duty of the medical profession to see to it that its members are not only properly educated in medical schools but also kept fully informed as to the developments in the cure and prevention of disease. Medical organizations, state boards of health and medical colleges need to coördinate their efforts so that the most recent knowledge may be transmitted even to the most remote sections of the country. Excellent recent examples of the rapid dissemination of medical knowledge were the use of insulin for the treatment of diabetes and of liver in the treatment of pernicious anemia. Yet even these two recent and relatively simple procedures are far from being used to their fullest efficiency by many of our doctors. Therefore, the responsibility here rests on the individual doctor because the material for study has been furnished and if he is not fairly well equipped to meet emergencies only his mental sluggishness can be blamed. In most communities can be found one competent to perform an emergency operation but in how many of these same communities can we find one competent to perform a transfusion or even to make a dark field examination for the early diagnosis of syphilis? These are some of the things the people have a right to expect of our profession.

In addition to giving patients the benefit of present medical knowledge, a second obligation of organized medicine is to furnish medical service to all the people. This is a combined responsibility of the laity and of the profession; the solution of which is the community or city and county hospital that will furnish facilities for the patients of all the physicians living within a given territory. These hospitals should have an outpatient clinic for the care and treatment for all ambulatory indigent patients. It is the duty of the profession to furnish medical care, but it is the duty of the community to furnish all of the facilities for the application of this medical care. The community hospital has four important and distinct functions, the first being the prevention of sickness; the second, the care of the sick; the third, the training of

nurses and internes to care for the sick; and, fourth, the providing of proper facilities for study and research into the cause and cure of sickness.

Opportunity is afforded the medical profession to take the leadership in all health activities. There should be no conflict between those physicians engaged in public health work and those in private practice. Conflicts in the past have resulted from lack of mutual and sympathetic understanding. While the particular sphere of the private practitioner is the treatment of the sick he should lose no opportunity to help spread the knowledge of health education and the prevention of disease. At the same time health officials should discuss their problems with the local societies so as to obtain their understanding and coöperation.

It has been customary for all medical knowledge to be kept a closely guarded secret, but now, an intelligent public is anxious to learn more and more of the fundamental facts of the science of medicine. I believe we can accomplish much more by taking the public into our confidence and giving it correct information about the essential things concerning the cause and nature of sickness rather than by appealing to legislatures for laws and restrictions. The people are athirst for knowledge and if we who possess it do not disseminate it they will acquire incorrect information from those not properly trained to give it. Next week in Georgia we will have "Health Education Week" which has been officially proclaimed by our Governor and the mayors of our principal cities. This was initiated and is being carried on by the Medical Association of Georgia in coöperation with many other agencies in the State. Meetings and clinics are to be held in more than a hundred counties in the State and in some counties meetings will be held in several different cities as well as in all the schools. When the people know that typhoid, diphtheria and other diseases are caused by bacteria and that prophylactic inoculation can prevent them they will no longer object to these measures. In this manner we can teach the people that the source of correct medical information is the family physician who is an integral part of organized medicine.

Much has been written recently about the cost of medical care and usually the impression is left that it is the *high* cost of medical care. Yet little has been written about the increased length of time required to train a physician and of the very greatly increased cost of this training. Today an enormous outlay of time and money, estimated as high as fifty thousand dollars, are required to produce a modern physician. When we add to this the additional outlay for laboratories, X-ray equipment and other necessary accessories to give patients the benefits of present medical knowledge the slight increase in medical fees during the past twenty-five years becomes insignificant. In fact, the increase has not been nearly sufficient to compensate for the additional costs of the necessities of life, let alone any of the luxuries. Furthermore, according to Michael M. Davis, in a recent article on "Doctors' Bills and People's Billions," the doctor's fees make up less than one-fourth of the total sickness costs of the people in the United States, more being spent for drugs, medicines and appliances than for physicians' services.

In this connection, it is interesting to note that thirty per cent of our total sickness cost is expended for hospital care. Because of the increased demands made on the hospitals to bring them up to a high standard of efficiency during the past fifteen years they have increased their running expenses 135 per cent, but by the exercise of increased economies they have been able to give service at an increase of only 65 per cent during the same period of time. In the meantime, hotel accommodations have increased over 100 per cent—and they furnish only food and lodging and none of the elaborate and complicated services which have become a part of the modern hospital. It is easy to understand that unnecessary duplication of hospitals and training schools for nurses add to the cost of hospital service and reduce the efficiency of hospitals and nursing schools. It seems reasonable that the consolidation of many hospitals and training schools and the elimination of others would, in a great measure, reduce the total hospital expense.

If well applied economics will help to reduce the cost of hospital service, efficiency methods when employed by physicians, will also reduce the overhead in the practice of medicine. Elaborate offices, X-ray equipment, clinical and other laboratories, the employment of highly trained help—all of these when used only a short time each day only add to the cost of medical care and reduce the net income of the individual doctor. The physician is primarily an individualist. He has always worked alone and abandons tradition slowly. He has made slight adaptations from the machine age; he is a one-horse farmer in an industrial world. While organized medicine must always support the right of the individual to choose his own physician and must retain what has proved good in the art of medicine while practicing the sciences of medicine, it can and should encourage closer coöperation between its individual members.

Any consideration of the cost of medical care would be incomplete without an inquiry into the present and future prospects of the people to pay their sickness costs. Will the masses become more and more able to pay for these necessities or will they finally become so dependent as to require paternalism? The recent study of Dr. Willford I. King on "The National Income and Its Purchasing Power" gives encouragement to the struggling physician. He concludes that although the buying power of the dollar has decreased about sixty per cent during the past twenty years, the actual purchasing power of the American people has increased fifty per cent in the last eight years, this being the greatest increase in the world's history. "The rich are standing still, the middle class is gaining strikingly in wealth and numbers, and the poor are decreasing in numbers," is the conclusion of the report. Surely with such an outlook sickness insurance should be within the reach of the great mass of our people and with such they could pay their sickness costs.

It is well to remember that the practice of medicine from the earliest times has been safe in the hands of the private practitioner. Organized medicine was initiated and has been maintained by the private practitioner and it is the prime duty of organized medicine today

to support the private practitioner in the performance of his chosen work and to see to it that every individual is given the privilege of selecting his own physician and being treated by him.

In conclusion the medical profession has the opportunity to assume and maintain leadership in all medical activities. In practicing the science of medicine it must not lose sight of the good existing in the art of medicine as it concerns itself with the educational and spiritual things as well as with the material things. Some of the means of solving the problems which are agitating it are community, city and county hospitals, health and accident insurance payable to the patient himself so that he may have the privilege of choosing his own physician and closer coöperation between the members of organized medicine for greater efficiency.

President Crowell: Dr. Bunce, I am sure that I voice the feeling of this entire audience in telling you we have enjoyed your paper. You brought out the one thing in which I am vitally interested. That is that every man—it does not make any difference about his intelligence, how much money he has, how poor he is,—ought to have the privilege of selecting his own doctor. I have no patience with this making of a mule out of a human being.

Dr. McBrayer has some announcements to make.

Dr. McBrayer: I want to call the attention to the fact that the next paper on the program is by one of the distinguished physicians of the State of North Carolina, whom you all want to hear on "Business in Medicine." Following that another one of our distinguished guests will speak, and you will miss something if you do not hear both papers. You will miss something you ought to know.

There are two fraternal delegates from the State of Georgia present. I will ask them to stand.

The two delegates arose. (Applause)

Dr. McBrayer: We are mighty glad to have you present, and I hope you will make yourselves at home. You know what that means; what Southern hospitality is. There is a good deal around here most anywhere. (Laughter)

On page seven of the program you will find a roster of fifty fraternal delegates from the North Carolina Dental Society. It would take too much time to read the names. You can read them. They have a distinctive badge. I hope the M.D.'s will find it convenient to meet these dentists and I am going to ask them to stand.

The delegates from the North Carolina Dental Society arose. (Applause)

Dr. McBrayer: We are very glad to have you here and we hope to have you often.

President Crowell: The next paper is by Dr. Ernest S. Bulluck of Wilmington on "Business in Medicine." (Applause)

BUSINESS IN MEDICINE

Ernest R. Bulluck, M.D., Wilmington, North Carolina

Conditions surrounding the practice of medicine are rapidly changing. The reactions of the average physician fail to indicate that he is conscious of his new environment. During twenty-five years of unparalleled medical progress, the doctor has lost much of his prestige. No longer the director of his system of healing, but a subordinate worker, in a wholesale organized system of medicine.

The practice of medicine that was the physician's, has been engulfed by socialism. Disease, its study, prevention, diagnosis and treatment has been taken over by the state and federal governments. The control has been relegated to boards, committees, health departments, hospitals and field workers. In competition with the state, philanthropists have created foundations. The scope of their varied activities cover the medical field from prenatal care to the correlation of autopsy findings. Chains of hospitals are being built and those already in operation are rapidly being brought under the control of a central management. A cash donation and a continued allowance dependent upon subservience to the control body lead communities to grasp at the gift without realizing that the greater part of the expense is in the end to be paid by the same taxpayer who is already supporting the state system of medicine. A large number of small philanthropists are "free lancing" with this same system and further complicating it. Churches and fraternal organizations have been outstripped but are extending their facilities as rapidly as the funds permit. These funds to come from the same group who are taxed for the other two systems. Industrial corporations have entered the field. For their service the cost is paid from the worker's wage or added to the article and paid by the consumer. The list is too long but they all lead back to the individual citizen who either pays by taxation or by trading with the philanthropist.

The battle is on between the various organizations as to which one shall save the life. Competition is so keen that the sick are discovered, treated, maintained and frequently carried through convalescence and rehabilitation without expense to them whatever. With such paternalism guaranteed why be surprised that the average man spends his money on luxuries and that sickness finds him unprepared?

The organizations maintain dispensaries, hold clinics and surveys. Outpatient departments affiliated with health departments, visiting nurses, religious and social organizations and societies for the prevention "of," send paid workers supported by intense propaganda, into the school, home and factory to bring back the work. This rolls up the numbers, swells the statistics and justifies the existence of the organization and its personnel. The health agencies awaken primitive fear and vie with each other as to which may more forcibly present their depressing information of impending danger. Few people are so perfect that an enterprising dispensary specialist cannot find something to remove or treat.

The public has been over-sold on health. It is so sensitized with terror that one unusual sensation is sufficient to bring about an anaphylactic reaction. There is developing a generation of phobophobiacs, neurotics and blood pressure fiends. The system that creates, fails to cure, and these people finally take their nostrums, apples, and citrus fruits directly from the advertising pages. In the fervent search for health they have forgotten that life is measured in terms of happiness and not by the span of years.

The organizations and hospitals are managed by laymen and politicians. Occasionally a doctor is added to interpret reports. They dictate the policies, direct the course of clinical medicine and decide, which of the physicians, licensed by the State, may use the facilities. Directions filter down through cumbersome organizations of boards, committees and sub-committees until they are finally enforced upon the physician by lay superintendents and nurses. Administration is further confused by a score of conflicting organizations, using the whip of publicity, who rate the hospital and its departments, each using its dominant idea as a yardstick.

In this grand scheme, every worker from the architect to the painter, from the superintendent to the orderly is paid a full wage, equal to the value of the service elsewhere, except the physician. The internes and residents work for practically nothing and the staff for absolutely nothing. No clock marks the limit of their duty and at no hour are they exempt from responsibility. After a pupil stage of ten years the physician is reminded that the experience he gains is his compensation. Experience is the inseparable result of duty well performed. It comes, in equal value, to every paid worker in the organization.

New enthusiasts now appear in the field. Through the press the public is being notified that it has been paying too much for its medical care. The unfortunate sufferer is to be saved again. This is to be done by building more hospitals with more empty beds. There are already about two to the patient and more are coming. New subsidiary departments and a more extensive personnel, will be required to ferret out the sick and guide them back into the hospital.

Everyone knows that a patient should receive care in bed, eat his little and spend an hour in the operating room for less than the seven-dollar-per-day average of the United States. Especially is this true when the grounds, building and equipment were a gift, exempt from taxes and partly maintained by contributions, subsidiaries and taxation. Any patient will assure you that the seven dollars was not spent on him. Very few cents went to the resident staff. None to the physician and surgeon. The actual treatment of the patient, while more intense, has changed very little. This cost is distributed or wasted through the organiztaion in manifold activities, having very little bearing upon curing of the sick. It is the doctor who cures the patient, yet the whole paid organization rides to glory on his back.

This work is called great and done in the name of charity. The public should realize that no hospital gives anything away. Every hospital, that continues to function, is paid in full for every service it renders. Philanthropic contributions may cover the accounting, rec-

ords, statistics, publicity, vacations and social activities but hardly reach the patient. The expense is borne by the self-respecting patient who pays his own expenses and the remainder is paid by this same type of citizen through forced contributions and taxation. The hospital or organization gives nothing whatever. The public due to triplication of service pays the bill about two or three times and the doctor does his work for nothing. The total public expenditure per actually sick man is enormous. It is well-nigh time that someone tried to see how much the taxpayer could be saved; not how much he will stand.

The organized agencies have filled the front pages with the news of their activities, until the public has become convinced, that they have to offer a better service than the individual physician has to offer, and at no direct expense. In this way about half of the most satisfactory and profitable medical work has been transferred from the physician to the organizations. This transfer has been accomplished by "news" advertising, extensive workers, and by the enthusiastic work of physicians, who hoped to gain publicity and win the favor of the managing boards. The personal value of the advertising was swallowed up by the institution and the boards have permitted the physician to treat his own patients for nothing. The result of these activities has also served to lessen the market value of the work to such patients as are still willing to buy it.

The socialization of medicine is a grand scheme. It is being carried out on a gigantic scale. It may represent the trend of the times, it may be best, but if it is the best system of medicine, a uniform method should be adopted. The thousands of various high-pressured, extravagant, competing organizations should be abolished and the panic-stricken citizen given some "financial" relief. If a medical monopoly be the choice then the physician should cease to maintain himself and give his time and services to the trust, to be passed on to the patient and charged back to the state that the patient supports. If the sick prefer to buy medical attention from a large concern the physician should render the service or create the selling propaganda and charge the concerns the value of the service less a wholesaler's profit to which the organization is entitled. If the socialization proponents will not employ you, let it be someone else. If this is not agreeable the physician should return to his own patients.

The doctor has been stealing the time and efforts that belonged to the people who give him his living, and giving it to competing agencies to incur the good will of prominent people or to read his name in the newspaper. The relative economic status of the average doctor shows what a blind fool he has been. There need be no embarrassment as to the cause of charity. Dispense it whenever you see it needed. There is very little left of the Lord's poor, social medicine has taken it over. When you serve that class a paid worker is put at leisure. The group exists in the country but the extension worker is out for the gleanings and the good roads are bringing them in. The devil's poor welcomed this system and the independent patient, insurance com-

panies and corporations are rapidly becoming convinced that the size of an organization is a guarantee of its effectiveness.

The transfer of medical care from the retailer to the wholesaler has gained tremendous momentum. The profession is apathetic, certainly inactive. Some adjustment should be made. The physician must win back his clientele or sell himself to the agency that is to treat it. If this cannot be done on a basis commensurate with the value of the service, then versatile men had better devote the time they give the organizations to some profitable sideline and young men be properly informed before they make their medical investment.

The responsibility for the present trend of medicine rests to some extent upon the physician. He has erred in giving about half his efforts to those who do not pay, in the hope that this would indirectly increase his income. The services devoted to socialized medicine have brought no compensation and lead to a loss in his clientele. He has attached his hopes to the good will of prominent leaders in his community but those people operate the social system. The phantom rich patient whose large payment offsets the free work is yet to be treated by the average physician. These hopes have failed. The physician, confronted with diminishing income and increasing requirements, is not to be denounced for trying to make some compensating adjustment that will permit him not only to maintain but to increase his present high standards. The doctor is an individualist, a poor follower. He cannot withstand the pressure of the machine that confronts him, except by crystallization of general principles and sacrifice of personal ideals. The profession is not poor in medical statesmen and adherence to their leadership could effect the changes necessary to bring the doctor into his proper place in this full-paid system of social medicine. The salary of the minister indicates that the public does not demand that work must be done without compensation because it is for the good of humanity. Members of organization boards do not give away the food, shoes, clothes, houses or entertainment in which they deal because they are conducive to better health. The physician need not fear that he will be condemned because he seeks to exchange a life of devoted labor for a reasonable reward and some hope of security for the members of his family.

President Crowell: Thank you, Dr. Bulluck, for that excellent paper.

Dr. L. B. Evans, Windsor: I just want to take advantage of this opportunity to say that I am mighty glad to hear the President in his address today, and the gentleman who has just finished his address emphasize the selfish side of the practitioner of medicine. Only yesterday I received a letter from a friend of mine who has spent the whole of his life practicing medicine, spending what he made, improving himself, going off to the clinics and keeping himself abreast of the times. He asked me to lend him some money to help his boy at college.

Most of them are in that fix and I am glad to see these gentlemen emphasizing the selfish side of the practice of medicine. We do enough charity at best. Someone might say, "Why are you saying this? We learn in the profession both by our successes and failures."

My old boyhood friend, who has just taken his seat, represents a success, and I, I guess, the failure. Anyway, we learn by success and failure in finance as well as in other ways, and I think it the duty of every man, and I think it should be stressed to these young men that it is their Christian duty to their country and to themselves, to lay up a nest egg while they are young.

A friend of mine speculated a little along in his boyhood days with me. We met some time ago. I asked him how he was getting on. He said, "I have laid them aside. When I get $100 now I put it into a government bond; I put it in the safe and forget I have it."

It is a good idea to do that. You stir up no enmity with your patients. They need not know you have it. It is a nest egg and will give you confidence and service.

I believe it was Pope who said:

Young man, get wealth and place
If possible, with grace;
If not, by any means
Get wealth and place.

No, let us follow Bobby Burns who says:

To catch Dame Fortune's golden smile,
Assiduous, wait upon her,
And gather by ev'ry wile
That is justified by honor.
Not to hide it in a hedge,
Nor for a trained attendant,
But for the glorious privilege
Of being independent.

(Applause).

Dr. W. B. Murphy, First Vice-President, assumed the Chair at this point on request of the President.

Dr. C. H. Cocke, Asheville: Mr. Chairman and Fellows of the North Carolina Medical Society:

We have been honored by the visit in the past of many distinguished members of our profession. Today, through the gracious courtesy of our guest, we are to be addressed briefly by the only man who has had the distinction and honor of at one time being President of the American Congress on Internal Medicine, and the present incumbent of the office of President of the American College of Physicians.

It is my great privilege and pleasure to present to you Dr. Sidney R. Miller, of Baltimore, Md., at present President of the American College of Physicians. Dr. Miller:

The audience arose and applauded.

Dr. Sidney R. Millers: Mr. Chairman and Members of the North Carolina Medical Society:

I am here primarily by courtesy of your able Secretary, Dr. McBrayer, who, I think, is somewhat of a seducer. At any rate, he got Dr. Loveland and myself here in order to meet with the Fellows of

the American College of Physicians who are in this state. I had little expectancy that I should be called upon to address the Society at large, and shall not take much of your time.

There are, however, just a few things I think might perhaps with profit be mentioned. The first is to tell you with the greatest amount of brevity of what the American College of Physicians is. It is an organization that was started in 1915 by some far-seeing and visionary people who met the difficulties that are usually encountered with any new and perhaps competitive movement. However, through a period of years marked by a good deal of stress and difficulty, odds and ends, it has survived to a point now where there is an enrollment throughout the United States and Canada and the provinces of America of approximately 2,400 physicians.

These physicians represent internists in the literal sense of the word. That is, men who are in internal medicine or some applied branch of medicine so that they may legitimately be called internists. We have not yet reached, as internists, the affluence that surgeons do, and therefore to date there have been no memorial libraries built and no standardizations of hospitals and other worthy and wide-reaching things done by the College of Physicians.

That, however, is part of the vision and it remains to be seen what in time an organized body of internists may do not merely, of course, for their own interests, but the broad interests of the profession in such ways as may occur to those who are capable of forming the best judgments.

The American College of Physicians thus far has accomplished this: The organization of a society which is nation-wide in its character and which has its outburst once a year in terms of a clinical session held in some large medical center for the duration of one week. Those of you who have attended these sessions will remember it, and bear me out, I think, in the statement that those weeks have represented invariably a tremendously intensified, condensed post-graduate course in medicine as expounded by the leading exponents in those medical centers.

No one could possibly travel to Boston or Minneapolis or New Orleans or to other centers of medicine and not feel that he had been back to college and had rubbed shoulders, not merely with clinicians, but with scientists who are endeavoring to advance medicine from that angle. So, at least, we have provided once a year what might be called in slang "a bang-up affair" lasting for a week to which not merely the members of the college are invited or allowed to attend, but anyone who through reason of interest and enthusiasm in his profession would care to take the time to come as a guest for the payment of a very nominal fee, approximately $10.

The organization, through the particular efforts of Dr. Wartham, has put on the list of medical publications a journal which is second to none. You might say those things are relatively small. They are. The American College of Physicians is still young, but it is hoped that the college will serve in this particular way, namely, that it shall be a clearing house, as it were, an inspiration, for the coming generations

of internists to aspire to, so that their work, their publications and their general interest in medicine and teaching shall be such that though they do not reach the rank of illustriousness or become famous in the literal sense of that word, they measure up fully to the requirements of a good internist.

The college, therefore, can be looked upon entirely as a democratic organization. It is not a closed organization for those who have "arrived," who have affluence, who have made tremendous discoveries or who have written books. It is intended, of course, for those of fame, but also as something to which election can be regarded as having put the stamp of personal effort as well as consistent endeavor to live up to and keep abreast of the rapidly changing medical times.

Beyond that, I do not know whether the college need have any particular aspirations in terms of legislative movements and so on. That remains to be seen. That is, as I see it, the fundamental excuse as well as the greatest reason why the college has a right to exist.

North Carolina is not adequately represented in the roster of the American College of Physicians. At the present time, I think, there are only twenty-five Fellows from this state and we all know perfectly well that there are a great many who have already arrived and who are on the way who should not only aspire to belonging to the college, but should feel it somewhat of a professional obligation for the simple reason that anything one can do to further the cause of internal medicine is a legitimate objective. I should, therefore, like to leave the suggestion in your mind that those of you who might be interested and who should be members and who would profit by the activities of the college, give serious thought to it.

Finally, and as a near relative and co-worker of yours, for it is not far from here to Baltimore, may I say that the next meeting of the college is to be held in Baltimore in the latter part of March, 1931, and we bid you all an earnest welcome. (Applause)

Chairman Murphy: I want to thank Dr. Miller for that splendid address.

We have a distinguished visitor with us this morning. I want to ask Dr. Thurman Kitchin to bring him to the front.

Dr. Thurman D. Kitchin, Wake Forest: Mr. Chairman, it is only within the last few minutes that I knew that I was going to have this honor, but it is none the less a genuine pleasure. For twenty-five years I have been a personal friend of this Southerner now sojourning in Philadelphia, and it could not be other than a genuine pleasure to bring him before you. However, another reason is the great number of Jefferson men in the medical profession in this State which makes it appropriate that the Dean of Jefferson Medical College for the last thirty years, and the man who is the embodiment of all the best in the new Jefferson should be present at this meeting.

The paper of Dr. Bulluck on the business side of medicine reminds me to say this about Dr. Patterson: The Pennsylvania Legislature three years ago appointed a commission known as the Medical Healing Arts Commission. On that committee was appointed one member from the State Senate, one from the House, one chiropractor, one eclectic.

one physician, and two men who were supposed to be honest gentlemen. (Laughter) The cults were all aglow in Pennsylvania. They studied this thing and worked it out and rendered their report to the legislature in favor of the cults.

Dr. Patterson was the only man who stood out for regular medicine. He filed a minority report. He didn't stop there. He went before the legislature and "licked" the whole crowd in true Southern fashion. They accepted his bill and then when the State Medical Society of Pennsylvania met in Erie last October, in recognition of this service, it did not simply elect him president of the Pennsylvania Medical Society, but went there and registered the will of the entire medical profession of Pennsylvania. It is the only time in the history of the Medical Society of Pennsylvania that the President has been unanimously elected, without opposition. (Applause).

I know very little about introducing him. I don't know what he is going to speak about, but I believe it is some phase of the heart. If it is, I simply want to say to you that it is my humble opinion that when more is learned about the heart, Dr. R. Patterson will know it. (Applause)

The audience arose and applauded.

Dr. Patterson: Mr. Chairman and Gentlemen: Dr. Kitchin, I am, of course, in some embarrassment after an introduction of that kind and I hope you will translate the very kind and gracious words of the introducer back into terms of personal regard and friendship.

My paper deals with a cardiac condition. My justification, perhaps, for presenting it to a general group of this kind is the fact that it is of far greater frequency than has been generally recognized. There are few men in the practice of general medicine and surgery who will not encounter forms of this condition. Perhaps a matter of further interest may be that it is a common affliction among members of the medical profession and, quite frequently, accounts for their exit from the field of their activities.

Dr. Patterson presented his prepared address. He stated he would revise his manuscript and forward it direct to Dr. McBrayer, but at time of going to press it has not been received.

Dr. McBrayer: The Secretary feels he ought to apologize for varying the program this morning, but as the days came along after the program was printed, it was found our guests could not be present tomorrow, and so we are offering our sincerest apology to those who shall follow. If we do not finish the program for this morning, we will have some of these off the program for tomorrow morning and take it up where we leave off.

Chairman Murphy: We will now have an address by a representative of the North Carolina Dental Society: "Is There a Need for a Closer Coöperation Between the Physician and Dentist?" Dr. J. Martin Fleming, Raleigh! (Applause)

IS THERE A NEED FOR A CLOSER CO-OPERATION BETWEEN THE PHYSICIAN AND DENTIST?

J. Martin Fleming, D.D.S., Raleigh

In order to arrive at some definite understanding as to the relationship existing between the medical and dental professions, it might be well to go back somewhat and review the history of the status of dentistry from a legal standpoint in North Carolina. During the Civil War a regular practicing dentist in the city of Salem, N. C., claimed exemption from military and jury service on the ground that he was a physician, practicing a specialty of medicine.

The case was carried to the Supreme Court of the State and, in a famous decision handed down by no less a person than Chief Justice Richmond Pearson, it was held that a dentist was a physician, in the strict interpretation of the term, and that the dentist was, therefore, not subject to military or jury service.

This decision held good for a period of about thirty years, and then another famous Chief Justice, Judge Walter Clark, reversed this decision. In this latter case, State against McMinn, one Dr. Smathers, a dentist of Hendersonville, N. C., had given a patient a prescription for one pint of whiskey for toothache, and the barkeeper McMinn had sold the whiskey on Sunday, and was convicted and fined for it. The barkeeper appealed the case and it finally reached the Supreme Court.

Rendering the decision of the Court, Judge Clark made no reference to the long standing opinion of his illustrious predecessor, as to our professional standing, but took a directly opposite view and stated that he could see no reason for our being classed other than mechanics, doing purely mechanical work. The dental profession as a whole has never been very proud of either of those decisions. Neither opinion has quite given expression to our real feelings in the matter.

It is quite possible that the dentist was originally a physician, one who had developed a manipulation skill to a marked degree and who had taken so much pride in that phase of his work, that he finally gave his whole time to it. At any rate, the dentist gradually expanded his field, and his work gradually demanded a more technical training than the medical colleges were giving, and so the beginning of the dental college. Its very establishment meant that we did not wish to be physicians, and, this Salem dentist who was so anxious to be classed a physician, did not wish to be so classed that he might render a greater service to his State, but a lesser one, and at a time when the State and the Confederacy sorely needed men. We are not proud of that decision for that reason.

In the Clark decision the dentist had no direct connection. He was more or less an "innocent bystander." The case was State against McMinn for selling whiskey on Sunday, but when Judge Clark goes to the extreme of saying we are only mechanical workers, he seems to the profession to show a woeful ignorance of our aims, purposes and achievements. He lived to see the time when it was necessary to consult a dentist in his own case about matters other than the mechanics of the profession, and he probably would have rendered a different

decision later in his life. If our work is only mechanical, then why the courses in the cardinal branches, Anatomy, Chemistry, Material Medica, Physiology and Pathology? The dental course would be much shortened in time, and much lessened in expense, if we were taught only the mechanical side of it. The *original* dental college did not neglect these cardinal branches, and the course has broadened rather than narrowed as the years have gone by. Turn if you will to the entrance requirements to begin the study of dentistry; turn to the curricula of the better grade A dental colleges. Compare these entrance requirements and college curricula with those of your grade A medical colleges, and then decide whether our training has qualified us to meet you on a common ground of coöperation.

The physician and the dentist need to come into closer fellowship. It is as necessary for the dentist to know something of medicine as for the physician to know something of dentistry.

Sometimes we run into border line cases in which we are surprised at the lack of knowledge we have of each other's work. Coöperation would do away with that. It is not necessary for us all to be physicians. We do not seek that, but we crave a knowledge on our part of your subject and a knowledge on your part of our subject which will guarantee at least that we be qualified to help each other to a saner coöperation. We feel that we have that knowledge now, but that we have been lax in using it. Dr. Charles H. Mayo, whom we all love to quote on account of his openmindedness to the dental profession, said: "That the dentist who looks into his patient's mouth will miss something of vital importance to his patient if he sees only teeth in their capacity of masticating and aching, as will the physician who examines his patient complaining of some local trouble, systemic condition or organic lesion, if he forgets the possibility of an oral cause."

We naturally have a great many border line cases. It is easy for "dermatology to run into stomatology." It is easy for an abscessed tooth to cause sinus trouble. It is easy for sinus trouble to cause toothache, or pains that seem to be of tooth origin. The work of the rhinologist, the general surgeon and the oral surgeon comes directly into the very closest contact on account of the proximity of their fields of labor and demands the most intimate coöperation.

But the need of coöperation does not stop there. We need it in almost every line of general practice from diagnosis to major surgery.

No diagnosis would be complete nor should any diagnostician, worthy the name, be willing to give his final findings without having had all oral conditions checked by a competent dentist. Physicians do not look at the tongue as much as they once did, as an index to the disorders of the stomach, because they say the inflammation there found is too often misleading, and yet there are oral manifestations of pathology which are so important as to have almost become landmarks in diagnosis, to those who study them and understand them.

The lack of knowledge of these landmarks is not peculiar to the physician alone—dentists neglect that opportunity of diagnosis too.

You will find one of the earliest and surest symptoms of measles in the mucous patches of the mouth. You will find the "strawberry

tongue" of scarlet fever a safe guide in that diagnosis. Although the three stages of syphilis frequently merge into one another, you can be reasonably sure of its progress by mouth pathology. You certainly can be sure of the congenital type of the well known Hutchinson's teeth. Certain inflammatory conditions of the mouth will also indicate diabetes and with even a suspicion of those symptoms a physician should be consulted before an extraction is attempted. You will all readily agree that that form of toothache which is a reflex pain from pregnancy can best be handled by coöperation of the two professions. In the matter of trifacial neuralgia, which seems so insignificant except to those who have it, there is need for the most active coöperation. It frequently comes from an impacted wisdom or other impacted teeth, and frequently from systemic causes other than dental, and calls for the highest type of coöperation between us. Too many dentists very foolishly extract a tooth to cure it. Many such teeth are so sacrificed, some at the suggestion of a physician but all without avail. There is too little coöperation in the field of X-ray work. The X-ray at best is only one of many diagnostic symptoms.

A physician too frequently sends his patient to a radiologist for a dental picture and then depends on the radiologist's reading of the picture to decide what is best. In some cases the radiologist is neither a physician nor a dentist—and, if the physician himself is not satisfied with his own interpretation of the picture, how does he expect the radiologist, with his limited knowledge of pathology, knowing nothing of the clinical history of a case, nothing of the patient's powers of resistance, to be able to pass on a subject so vital to the life of a patient?

What blunders we dentists would make in attempting to read a picture of the lungs or of an ulcerated stomach, and what blunders are also possible from a physician reading a dental X-ray!

It is certainly a field in which we need active coöperation, and it does seem only fair that the dental radiograph, no matter who made it, should pass through the hands of a competent dentist before any decision is reached as to what is best to be done with any dental lesion. Especially is this true in the larger field of focal infection which has held the limelight of cause and effect so long, and which will continue to hold a place in general diagnosis as a possible cause of obscure conditions.

It is said that the span of life has been materially lengthened within the last decades.

If you will study the statistics you will find that the average span has been greatly increased, but the increase has come principally in infant and child mortality. There has been very little lengthening of the days of older people.

Medicine and health improvements have all but conquered in the field of epidemics, such as yellow fever, small-pox, typhoid fever and diseases of similar character, but we have neglected to check the rapid growth in the toll of degenerative diseases.

Focal infection has had its share in this increased mortality but a more comprehensive coöperation between us will go a long way towards reducing the death toll of the degenerative diseases, especially those

originating in the oral cavity. We have heard too often of the three great sources of focal infection: "The teeth, the tonsils, the tummy." In our own minds we forget that there are numerous other sources which must be taken into account, and that the teeth must not be blamed for more than their share.

Diagnosis by elimination may be all right, but do not eliminate all the teeth, good or bad, to decide whether or not the teeth are responsible. Some years ago there was a great demand that all pulpless teeth should be removed, regardless of the case history and regardless of what the X-ray pictures might show. We very innocently spoke of a pulpless tooth as a dead tooth and so found cause to condemn it because we called it dead, but a pulpless tooth is not a dead tooth as long as a live peridental membrane exists and many pulpless teeth are giving satisfactory service.

Those who once condemned all pulpless teeth are coming back to a saner viewpoint which allows some latitude of action.

It does seem to be nothing but common sense that if we use the X-ray diagnosis to condemn a tooth that we might at least use this same means of diagnosis to save one. It is a great pity that science has not yet devised some plan by which a microscopic reading might also be had with each X-ray picture, but it has not yet been accomplished and without a microscopic reading we must use every means of detailed diagnosis, taking into consideration the general health of the patient, his power of resistance, his family history—all of these points are to be considered and no well founded conclusion can be reached without active consultation and coöperation.

This coöperation too can be furthered by being more careful in what we say to a patient in referring him to one another.

A dentist would not send a patient to a surgeon and tell him either what to do or how to do it. Something should be left to the surgeon's knowledge and initiative.

You would not send a patient to an oculist and tell him what to do to an eye.

You would not send one to a rhinologist and tell him what to do to a sinus. He would have to decide that for himself and by himself, if there was no consultation. And yet too frequently we have patients coming to us telling us that Dr. so and so said take this tooth or take these teeth out.

Sometimes you can be reasonably sure that a tooth is diseased, but are you always sure that it cannot be treated and saved?

Are you sure that that individual tooth will not be needed in the support of bridge work or artificial dentures? There are more points to be considered than the simple extraction of the tooth.

If any one thing more than another leads to misunderstandings between the professions it is this very point of wanting to tell the other man what to do. We must avoid it.

It is hard too for the patient to get away from the suggestion that possibly his teeth should be out. Frequently when one conscientious dentist has refused to extract them, he, with this mental complex which a physician has unthoughtedly implanted, goes to some less conscientious

dentist who will, for a consideration, extract them all. "The pity tis, tis true." If there was a more active coöperation in consulting about this matter of tooth extraction there would be many teeth saved which are now extracted without giving relief to the neuritic or arthritic condition which it was hoped to relieve, because too often we have not removed the cause when we have removed the teeth. The cause coming from some source not even suspected until the teeth have been sacrificed by the process of elimination.

A false diagnosis, or a false idea of independence from consultation is too serious a matter when it costs a patient his teeth. Put yourself in his place and experience it. In the realm of oral surgery we need most active coöperation. When we speak of an oral surgeon we do not mean simply a dental surgeon. All dental surgeons are not oral surgeons.

The oral surgeon is a highly developed specialist that deals with any and all lesions of the oral cavity. In this field the oral surgeon and physician can certainly be of help one to another.

We feel that there should be no encroachment of even the oral surgeon into the field of the rhinologist and that the rhinologist should avoid the field of the oral surgeon, but there are certainly many cases where the general surgeon, the oral surgeon and the rhinologist should be of the very greatest help to each other.

Take for instance the question of cleft palate. Too often the general surgeon operates on that with too little thought of future dental restorations, while the strictly oral surgeon always has that in mind. In cases too of osteomylitis or the removal of any dead bone from either jaw, the oral surgeon has more thought for the future restoration while the general surgeon is thinking more of the case in hand than of the future dental problems.

Then, too, the oral surgeon is more at home in the narrow confines of the oral cavity.

He is accustomed to the limited operating space. The general surgeon would be more at home operating from the outside. Many of us have seen scars from an outside lancing of an abscessed tooth, but a case would have to be difficult indeed, and to have progressed a long way, before the oral surgeon would operate outside. He is at home within the mouth. The manipulative operative skill which he has acquired in his study of dentistry renders him especially qualified to do that work. It is said that probably the greatest help that dentistry can give medicine lies in the field of preventive dentistry. It is such a well established fact that diseased teeth may cause so many systemic disorders and have such a marked potentiality for evil, it seems that the dentists' best endeavors would be to prevent rather than to treat and cure a source of infection. You might practice all the preventive medicine known to science, but unless there is coöperation with the dentist, that class of systemic diseases which come from focal infection of the teeth would still flourish, but active coöperation on lines of prevention would mean much to both professions and to mankind.

The idea of active coöperation along lines of prevention has long since been seen by the State Board of Health in the appointment of a

dentist as one of its members, and in the maintenance of an efficient corps of young dentists under the able leadership of Dr. E. A. Branch.

This dental work is doing more to educate the masses along lines of prevention than any other similar health work undertaken in a number of years. Dr. Branch himself has spoken to nearly one hundred thousand within the past year. This work has come about solely through the coöperation of the State Board of Health, the dentists and the County Boards of Health, and is bearing abundant fruit in far reaching results. Only a few days ago the Associated Press carried a dispatch from an open forum meeting in Jacksonville, Florida, in which Dr. Joseph C. Bloodgood of Johns Hopkins University gave nine reasons why he felt that cancer would soon be under control, and one of the nine was the coördination of the departments of health, medicine and dentistry, and he predicted that in every state, county and city there would soon spring up some form of joint organization of the three—health, medicine and dentistry, looking to a finer spirit of coöperation between the professions and a wider education of the public along general health lines.

The dental profession welcomes the coming of that opportunity. In some counties such an arrangement already exists and it is working well. There is also a recognized demand for coöperation with the dental profession in the up-to-date hospital.

The Mayo Clinic at Rochester, Minnesota, has its dental staff housed in its own dental building into which every dental condition is referred and where every research of dental nature is carried on with that same degree of thoroughness which marks every department of that great clinic. The same thing is true of other health centers. The dental profession in North Carolina earnestly hopes that the great hospital soon to be open in our State will also have its dental clinic in charge of a dentist or corps of dentists who will measure up in their own profession to the high standard of the members of the staffs of other departments of that institution. We feel that no health center is complete that lacks its dental staff.

Dental recognition is not thus asked to satisfy the ambition of any man or set of men, but in a friendly spirit of coöperation which aims at the greatest possible service to all who come within its walls for treatment.

Now to come back to the proposition as to whether a dentist is or should be a physician; we feel that while the two professions are closely associated in many phases of their work, there are still many points that do not intimately touch. We feel there would be too much lost motion in the training that would be required to obtain both degrees.

Some years ago a college in Virginia decided to require a medical degree before granting the dental, but the plan was not found practical. The better course seemed to lie along the line of a whole-hearted coöperation, and this is what we plead rather than the privilege of being called physicians.

In the report of the Carnegie Foundation for the Advancement of Teaching—October, 1928—we find this thought of coöperation expressed:

"Measures for prevention, and for application of medical principles, are fundamental in dental practice. But the mechanical and esthetic requirements are also essential, and are becoming increasingly exacting as the corresponding intra-oral procedures multiply and attain greater complexity."

"The separate organization and promotion of dentistry has not only been vindicated by past achievements and present quality, but also is a guarantee that further developments of the mechanical and esthetic aspects of dental practice will not be neglected."

"Those who reverse the normal growth by which the branches of science and of medicine become wider and longer, and then subdivides, might advantageously consider these two questions:

(1) "Should the dentists noting in their patients the correlations between dental conditions and, say, arthritis, be expected, with all their other duties of practice, to include in their service the treatment of arthritis; or should they be taught to note these correlations and, by advisory health service, to guide patients to proper treatment of arthritis by physicians?"

(2) "Should physicians, noting in their patients the correlations between, say, arthritis and dental conditions, be expected, with all their other duties of practice, to include in their service the treatment of dental conditions; or should they be taught to note these correlations and, by advisory health service, to guide patients to proper treatment of the dental conditions by dentists?"

Your answer to these questions propounded by Dr. Geis would be obvious because you can readily see that no one man could possibly grasp this whole field of health service—and, if he could not grasp it, then the only remedy left would be coöperation, remembering always the interdependence of one profession upon the other.

Dentistry recognizes yours as the parent organization. We do not ask coöperation of you feeling that our status will be raised nor yours lowered, or that yours will be raised at the expense of ours, but we do come prepared to meet you on a common ground of equal preparation for our respective duties. We feel that the greatest good to our respective professions and the public whom we serve can come from a mutual understanding of our spheres of work and of our ability to be of help to each other through more active coöperation, because in the final analysis we are both striving towards one common goal—the betterment of the health of mankind.

Chairman Murphy: I want to thank Dr. Fleming for his most excellent paper.

We have another address from a representative of the North Carolina Dental Society, "The Present Status of the Non-Vital Tooth," by Dr. J. S. Betts, of Greensboro. (Applause)

THE PRESENT STATUS OF THE NON-VITAL (OR PULPLESS) TOOTH

J. S. Betts, D.D.S., Greensboro

Before discussing my subject I wish to quote in full an editorial in a recent issue of *The Journal of the American Dental Association.* This

periodical is ably edited by Dr. C. N. Johnson, our most outstanding man. He discusses his subjects wisely and well. We have found that any suggestion he offers is sane, sound and sensible—and his slightest commendation, is indeed, as "praise from Sir Hubert."

"DEAD TEETH"

This unfortunate term has been accountable for the loss of many useful teeth, and it should be expunged from our literature. It is the fault of the dental profession that it was ever employed, and it should be the duty of the profession to see that it is eliminated. Medical men, not familiar with dental structures, naturally accepted the term at its face value, and it was accordingly logical for them to order such teeth extracted. No physician with any judgment would want anything "dead" left in his patient's mouth, and if a pulpless tooth were really a dead tooth, there would be no tenable argument in favor of its retention. But a tooth with a good pericemental membrane surrounding the root and attaching it to the alveolar process is by no means a dead tooth.

When the pulp dies, sensation is eliminated from the dentin, which can then be drilled or cut, without pain, and this circumstance led to the impression that the tooth was dead. It was a very natural misconception on the part of dentists, and no blame should be attached to them for its introduction. But the blame lies in the fact that this term was permitted to continue even after its fallacy was shown, and when the damage was done through its use had been amply demonstrated. Today, physicians quite commonly speak of "dead teeth" when they mean pulpless teeth, and the distinction between the two should be shown them by every available means.

Even without the histologic evidence, which is incontrovertible, the fact that these teeth frequently remain in the mouth for many years without being exfoliated is conclusive proof that they are not dead. A tissue that is dead will not be tolerated for any time by the system.

The harm that has been done by the use of this term can never be estimated. Patients, when told that they have dead tooth, are quite likely to begin to feel uncomfortable at once, and the fact that at least some of our ailments have a psychologic basis lends itself conveniently to the general mental demoralization which assails certain people under such circumstances. The term pulpless teeth is not only more accurate histologically, but also much less terrifying to the patient. The message should be carried to the medical profession through every possible medium that, when they speak of dead teeth, they are using a misnomer which is not only unjustifiable but also calculated to work a grave injury to their patients. Medical men are usually genuinely anxious to serve their patients in the most efficient way, and if they have been led astray by dentists in the use of this unfortunate term, it is high time that dentists do their share in correcting the error, and showing their medical brothers its fallacy. When this term is finally eliminated from medical and dental nomenclature, we shall have a more intelligent mental attitude toward the extraction or the retention of such teeth.

The theory of focal infection has been recognized for nearly a hundred years. While at the present time it is one of the most important

and most widly recognized phases of medicine and dentistry, our real knowledge of focal infection is a comparatively recent acquisition. Only recently has the theory been established by scientific investigation and experimentation.

Infection of the dental pulp, pulpless teeth and apical abscesses are theoretically the most dangerous of the various forms of dental foci. They are usually free from symptoms and hence unsuspected. They are situated in osseous tissues which allow little or no expansion. They can drain only into the circulation and are exposed to pressure transmitted by the teeth during mastication.

Clinical observations indicate that localized infections in certain structures, such as tonsils, teeth and sinuses, are more likely to be associated with systemic effects than are those in other structures, such as the lung, or the urinary tract. This may be due to the kind, number or invasive power of the bacteria in these locations, or to the peculiarities of the tissues harboring such foci. There is much clinical evidence indicating that foci of infection, as in tonsils, teeth and sinuses are often directly responsible for rendering attacks of acute infectious diseases more severe than they would otherwise be, and for increasing the incidence of complications.

The question of focal infection, in its broader sense, is as wide in its scope and as difficult of proper application as is the practice of dentistry, medicine and surgery combined. A focus of infection, that, for mechanical or any other reason, cannot heal or drain, that is teeming with organisms, often in mixed culture, must ever be considered, not only as a favorable place of entrance but also as a good place for bacteria to maintain or acquire high and particular invasive powers. Clinical observations support these contentions and experimental results have gone far to establish them.

Much has been learned by experimentation. The theory of elective localization has taken definite form. The long series of experiments in animals leaves no doubt that the elective localizing power of the bacteria in foci of infection largely determines the location of the systemic lesion or disease a person with foci of infection is likely to develop. However, it is observed that this does not always occur independently of predisposing factors, such as exposure, improper food, bad sanitation, lack of sunshine, which undoubtedly lower local or general resistance. The reasons for the elective localization are still obscure; and the practical applications of the principles of focal infection and elective localization are fraught with many difficulties.

The instances of cure or arrest of progress in systemic diseases by the removal of foci of infection are so numerous that search for and removal of all foci possible is indicated in almost every case of serious systemic disease in which there is good clinical or experimental evidence of focal origin.

Rosenow, Price and Haden who have made careful bacteriologic study and experimented extensively with animals claim that vital teeth free from caries are usually sterile but that practicaly all pulpless teeth removed from patients are infected, usually with streptococci. They claim that infection is present whether or not the radiogram shows rare-

faction. They claim also that it makes little or no difference if the root canal has been properly filled.

In the famous Buckley-Price debate before the Ordontographic Society of Chicago, a short time ago, the subject of which was: *Resolved that practically all infected pulpless teeth should be removed,* Dr. Price took the affirmative side arguing that under no considerations should a pulpless tooth be allowed to remain in the mouth, claiming that in every instance they are a positive menace to health, subjecting the patient to numerous and sundry systemic disorders and not infrequently bringing said patient to fill an untimely grave. Dr. Price painted the picture of their retention in the mouth as terrible and terrific.

Dr. Buckley was firm in his expressed belief that Dr. Price was wrong in his interpretations and teachings. He (Dr. Buckley) took the position that practically all recently infected pulpless teeth, with or without bone involvement, can be treated and saved without jeopardizing the health of the average patient in any way, adding that he believed the employment of simple remedies and the use of simple technic for the treatment of such cases is as effective as more complicated measures. He held that the claim that the periapical area must be absolutely germ free before it is safe to fill the root and that the operation of treatment can be done successfully only under strictly aseptic conditions has confused the issue and discouraged the profession, and is not based upon facts. He stated that since the normal tissues of the body are not always germ free, it is not necessary to demand more here than nature requires of other tissues, claiming that reasonable measures of asepsis, working with and through antiseptic and disinfectants, which is easily accomplished, are all that are required for success, provided the apices of the root are closed by a properly selected root-filling material.

Quoting Dr. Buckley: "I am making no plea, nor do I know of any one today who is pleading for the retention of infected pulpless teeth or pyorretic teeth when the infection cannot be eliminated by treatment or when there is systemic involvement, indicating an overload. We should study carefully the subject of natural and acquired immunity and understand more fully the biochemic properties of the tissues and fluids of the body; the production of antibodies, nature's method of controlling and eradicating disease. We should not decide what should be done with infected pulpless teeth until after we have questioned and studied the individual patient. The condition of the patient should be the deciding factor. If normal resistance is lacking, as evidenced by grave constitutional disorders, it would certainly be a mistake to advise the patient to continue with the overload when it could be reduced or, perhaps, entirely corrected by the judicious extraction of certain infected teeth. But when normal resistence is evidenced by the absence of systemic involvement, we have an entirely different story. The great majority of patients with evident foci of infection in the mouth are not systemically involved."

Pulpless teeth with open foramina infested with or harboring bacteria can, and frequently do, cause infection of the periapical tissue. Let us get clearly in our minds that the presence of germs and infection are not synonymous. Organisms may, of course, find entrance to any tissue

or organ in the body, but unless they grow, multiply and produce some deleterious action on the host, their presence is without any special significance. I feel sure that Dr. Price knows this, yet for several years he has given us absolutely no hope for saving a pulpless tooth, with the result that many mouths have been needlessly wrecked.

Dr. Price is high authority, and many have willingly followed his lead. They have proudly, even boastingly, called themselves "hundred per centers"—meaning that they recommend, advise and practice the removal of all pulpless teeth. Yet I find in Dr. Price's book "Dental Infections, Oral and Systemic," after citing a case in which relief seemed to follow the extraction of six suspected teeth, he says:

"Just here I wish to introduce a warning: Exodontists and physicians who do not have the heart-rending worries of making dentures comfortable and serviceable under conditions which are so nearly impossible as to be very discouraging, but where the very nutrition of the patient demands a persistent effort, will be disposed to take the evidence just cited as justifying the extraction of all the teeth in this and similar patients. I wish to stress that we have come to the time when involved teeth can be so definitely differentiated from those that are not involved that we are not justified in condemning all of the teeth for fear they may be involved. I am seeing continually patients who are suffering more from the inconvenience and difficulties of mastication and nourishment than they did from the lesions from which their physician or dentist had sought to give them relief."

I believe that in many cases the micro-organisms of oral sepsis become active after the bodily resistance has become lowered; that the very bad mouth condition of our hospital patients is, in many cases, the *result* of disease, not the cause.

Last of all, let me plead with you. Let me intercede for a useful and necessary organ of our bodies, the organ of mastication. With theories and scary howling all about us, like the label on a patent medicine bottle, let us be calm and reason things out before we mutilate a human body by taking away a useful part that can never be replaced as satisfactorily as it was. Let us consult and save the patient's body as well as his health. I beseech you, don't place a premium on the dental extremist. Please refrain from ordering a patient to have his teeth removed until you have done everything possible to save them. Be sure of your diagnosis, and have the courage to carry it out for the good of the patient and the comfort and happiness of the years you can save for him. And work with us to that end, and I pledge you that we dentists will bear our share of the burden and responsibility.

Chairman Murphy: We have a few more minutes before the lunch hour and we must crowd as much work into our time as possible. Some of the men will not remain over tomorrow. We will have at this time a paper by Dr. MacNider.

Dr. Wm. deB. MacNider, Chapel Hill: Mr. Chairman and Gentlemen: I will detain you gentlemen for only a few moments. I want to make an informal report on some laboratory work which I think has a certain rather definite clinical application and significance which might be of interest to you. I am quite certain one of the things that

all medical men are interested in is the answer to the general question "What Is Resistance?" Why does one child get chicken pox and the child sleeping in the same bed does not get it? Or, why can one person perhaps drink a considerable amount of alcohol and apparently not show any damage from it over long periods of time, while others cannot? What is that element of resistance in the individual as a whole against infections, for instance, against various types of metabolic intoxications?

That same question, I think, can be raised for organic resistance. Why can some hearts resist things that others cannot? They do. That is a fact. The same statement holds true for the liver, and perhaps all organs.

About ten years ago I became interested in trying to find out something about that in an isolated organ—not an isolated organ, but one from which you can get evidence pretty readily, namely the kidney, as to whether or not it had any resistance to certain poisons and if it did have any resistance to certain poisons, what was the histological or anatomical basis for that resistance?

(Illustrating on the blackboard). This is the kind of thing we get. I know some of the students I have had will enjoy this beautiful drawing on the blackboard. The kidney has a vascular structure called the glomerulus in which we are not interested in terms of this discussion. It has another type of tissue, an epithelial tissue arranged in a most tortuous and complicated kind of tubing. There are some poisons that injure the epithelium mainly. Most poisons injure all of the tissue in the kidney. There is one poison, uranium, which will injure the first or proximal convoluted tubule.

In Freiburg Nashoff's laboratory, he and a Jap, Sazuki, and they thought they could say it injured only this or that part. I don't think they can prove that. That is getting too particular in terms of focusing the thing. Uranium certainly injures the tube cells and when these cells are injured, when they are approaching death, this thing happens every time. There is an increased retention first of urea nitrogen, then non-protein nitrogen, and then creatinine.

The first evidence of that injury is a certain decreased output in the urine of phenolsulphothalin. The reserve alkali of the blood drops, and develops acid intoxication. It looks much like a pregnancy thing. I am not talking about pregnancy nephritis, but the thing you label pregnancy toxemias and perhaps we use that term because we don't know what we are talking about. We have to label them something. That is what we call them.

If you will let these animals alone, a certain number of them in which these cells have not been too severely injured, will reline these tubules with the same type of specialized epithelium and if they do that, then these curves just change. The reserve alkali goes up. The output of this diet goes up. There is first a drop in the retention of the creatinine, and along with that, a drop in the retention in the blood of non-protein nitrogen and urea nitrogen.

If you give to that animal within six months the same amount of this poison, functionally he repeats what he did the first time, or repeats it in an intensified form and dies. The thalen is reduced to zero, there is

marked acid intoxication and retention of these three bodies in the blood. Some of these animals come out of their severe illness and don't get complete functional restoration of the kidney. They will have slightly reduced thalen output. They generally have—I can say they always have a normal reserve alkali. They don't have any retention of creatinine. The non-protein nitrogen may be up a little bit. The urea nitrogen may be up a little bit.

If they have come back but are not perfectly well, these tubules reline, not by the specialized type of cell. They are relined by a flattened ribbon-like non-specialized type of cell. If the tubules are relined by that type of cell, then you can give to this animal eight times the amount of this poison that you gave at first and he either does not show any evidence of real danger, or very little evidence of it.

In other words, as a result of a real disease and an epithelial repair of this type (indicating) and not that type, he has set up a resistance, a defense mechanism locally (indicating it) against this poison, which I think is a very interesting thing. I would not be surprised if that is not why a lot of chronic nephritics hobble along in pretty decent shape.

If they make a good comeback and reline the tubules by this (indicating on the blackboard), they reline the tubules by a type of tissue that is rarely susceptible to injury, but if they do not make a good comeback histologically or functionally, they reline the tubule by this type of cell (indicating), and although not perfectly well, they have some resistance against certain poisons.

In talking with people, I understand the common observation is that if a woman has a severe pregnancy toxemia and comes out of it, she is usually not susceptible to a secondary one. I am not making that as my statement. I don't know, but a good many people interested in obstetrics have told me that. I am talking about a tubular pregnancy thing. I am wondering if the reason why she has developed resistance against whatever causes a toxemia in subsequent pregnancy is because she has repaired her tubules by a flattened, resistant type of cell and not by a specialized and susceptible type of cell.

There is just one other point I want to call to your attention. The Professor of Medicine at Leland Stanford in California, called attention to a certain broad tube case that he called a real failure case. That may have some significance.

If a kidney comes back to the normal and relines its tubules by this high, specialized type of cell, then if a cast is formed in that, it has to be a narrow kind of cast. When that happens there is no retention, a good thalen output and normal reserve alkali. But if a kidney gradually fails, it forms them in this kind (indicating) of tubules so its casts, and apparently the thing he observed in terms of the significance of tube casts of different diameters, fits right into this observation which we made in our work.

In other words, if you get a split type of injury, a repair of that injury with specialized cells, you get a kidney susceptible to injury or even more susceptible. If you come through a severe type of epithelial injury to the kidney and it is relined by flattened non-specialized type of cells, even though not functionally as effective as these, they have a

resistance against injury and I think that is just one of the factors which may give to the kidney as a result of injury a local defense mechanism against future injuries of that type.

It is mighty good of you to stay beyond your lunch hour to listen to me. I appreciate it. (Applause)

The meeting adjourned at 1:10 o'clock.

SECOND GENERAL SESSION

TUESDAY EVENING, APRIL 29, 1930

Dr. C. M. Van Poole, Chairman, presiding

The Society convened in the ladies' card room of the Carolina Hotel and was called to order at 8:15 p. m. by the Secretary-Treasurer, Dr. L. B. McBrayer, who announced that Dr. C. M. Van Poole, the Chairman of the Committee on Obituaries, would preside.

Dr. Van Poole then read the report of the committee.

REPORT OF COMMITTEE ON OBITUARIES

Mr. President, Fellow Members and Friends:

We pause today to pay a tribute of respect to the memory of our deceased brethren of the profession who have passed to the great beyond during the last twelve months. Eulogies, at this time and place, can but imperfectly outline the character and public service of these dead patriots of the profession. It must be left to those cognizant with the lives and deeds of the departed ones to review and analyze their great life work and give them their true place in history.

It is, perhaps, to be regretted that eulogies upon members of the profession can not be delivered immediately after their demise; but as they are designed rather for posterity than for ourselves, and to put upon record a lasting impression of the opinions of those in position to know, and to commit to the printing press the power of perpetuating that record forever, it is probably not altogether improper that some time and some reflection should be given to the life history of these men at this time.

I may say here, Mr. President, that while men of various callings of our country and of other countries are commended, approved and extolled by general expression of sentiment as to their public career and the discharge of their public duties, there is no greater evidence of the true worth and character of the individual, than that which is secured from the expressions of respect and regard by those with whom the person was in direct association during the time of his natural life. In the case of the physician, it is a fact that, not only his comrades in the profession, but people of all stations in life, the poor and lowly, the masses, are largely among the throngs which gather to pay their last respects to the deceased. They are the persons who pass silently by the bier, indicating the great sorrow and the great attachment that had grown up in their hearts from the life and experience they had enjoyed in the close relationship with the faithful family doctor, a tribute that

could not be given to any public person otherwise than from a deep sense that had impressed itself upon the minds of these people of his virtues, of his forbearance, of his assistance to the lowly and indigent as well as those in the higher stations of life of the community.

These attributes, exhibited in the manifestations of the people can not but impress every person with the conviction that the deceased was a man, who in his life, in his conduct, in his relations to others, had secured the approval, not only of the wealthy, the intelligent, the prosperous members of the community, but also, that he was upon a line of entire affinity with the people in common. And further, these things also serve to do honor to his memory, honor to the man, honor to his community, a manifestation that could not have originated from any other source than the grandeur, the sincerity, and the kindliness of his character, and these evidences will long live to characterize, to preserve and to secure his memory in the minds and hearts of all classes of his community.

The abridged panegyrics to which we listen here this evening are but expressions of appreciation and admiration of the efforts and deeds of those who have passed. But, while these persons have passed from the scene of action here among us, they are not dead, they simply sleep. Sleep on!

There is no death! These stars go down
To rise upon some other shore;
And bright in heaven's jeweled crown
They shine forevermore.

NAMES OF PHYSICIANS OF THE STATE WHO DIED DURING THE LAST YEAR

Alexander, Anna L. ..... Charlotte
Alexander, H. Q. ..... Pineville
Anderson, J. G. ..... Asheville
Baird, John W ..... Mars Hill
Beall, W. P. ..... Greensboro
Brantley, W. T. H. ..... Bethel
Brown, Zeno ..... Greenville
Byrd, W. G. ..... Goldsboro
Carter, Franklin ..... Stokesburg
Cathell, J. E. ..... Moncure
Clark, H. I. ..... Scotland Neck
Cloninger, L. V. ..... Statesville
Crouse, W. F. ..... Crouse
Davis, A. P. ..... Walkertown
Davis, W. C. ..... Summerfield
Dawson, W. W. ..... Kinston
Dicks, J. F. ..... Stoneville
Ellen, C. J. ..... Greenville
Ellington, J. H. ..... Sandy Ridge
Falls, O. G. ..... Kings Mountain
Fowler, L. M. ..... Greensboro

Gary, R. H. ..... Murfreesboro
Gold, G. M. ..... Shelby
Graham, W. A. ..... Charlotte
Hamrick, T. G. ..... Shelby
Hicks, Romeo ..... Henrietta
Hobgood, J. E. ..... Morganton
Holloway, O. W. ..... Durham
Hord, J. G. ..... Kings Mountain
Lambert, G. H. ..... Asheville
Lee, Harry W. ..... Kinston
Lyday, Abram E. ..... Penrose
MacDonald, A. A. ..... Jackson Springs
Noble, R. J. ..... Selma
Odenhal, E. P. ..... Oteen
Reedy, Howard ..... Rowland
Reynolds, J. G. ..... Clinchfield
Shipp, W. T. ..... Valdese
Shuford, H. M. ..... Hickory
Smith, Owen ..... High Point
Smith, R. W. ..... Hertford
Snipes, E. P. ..... Jonesboro
Spoon, C. E. ..... Burlington
Sweaney, John ..... Durham
Thigpen, W. J. ..... Tarboro
Toole A. F. ..... Asheville
Tucker, F. P. ..... Milton
Wadsworth, W. H. ..... Concord
Wakefield, W. H. ..... Charlotte
Wallin, W. J. ..... Brevard
Watson, G. S. ..... Elon College
Whitaker, A. C. ..... Julian
York, H. B. ..... Williamston

DR. ANNA L. ALEXANDER

Dr. Anna L. Alexander, prominent female physician, died at her home in Charlotte, N. C., October 15, 1929.

Dr. Alexander was the first practicing woman physician south of the Potomac River. She was educated at the Woman's Medical College, Pa., from which she graduated in 1884. When she took her examination before the State Board of medical examiners, she made the highest grade of any of the 100 or more candidates who took the examination. She spent her entire professional life in the City of Charlotte, N. C.

DR. ANNA L. ALEXANDER

Dr. P. M. King, Charlotte:

Dr. Annie Alexander graduated from Woman's Medical College, Philadelphia, in 1886. She was nearly seventy years of age when she died this spring of pneumonia, having been the first woman physician licensed to practice in North Carolina. She was in general practice in

Charlotte and devoted a good deal of her time to the Crittenden Home there. She did a great deal of work and was highly respected. She attended the meetings of the Mecklenburg County Society with great regularity, and her death was keenly regretted by all.

DR. H. Q. ALEXANDER

Dr. H. Q. Alexander of Pineville, N. C. died Tuesday, June 11, 1929.

Dr. Alexander was born at Statesville, N. C. and had been practicing medicine since 1888, dying at the age of 55 years.

In the years 1903 and 1905 he was a representative of Mecklenburg County in the State Legislature.

DR. H. Q. ALEXANDER

Dr. A. J. Crowell, Charlotte:

I can not say when and where Dr. H. Q. Alexander graduated. I had not felt that it would be necessary for me to say anything about any of these deceased members, but I feel that we would not wish to pass by the name of this departed one without having something to say with regard to his life. He was a general practitioner at Pineville, N. C., a quiet, unassuming yet an intellectual man in medicine and a public-spirited man, a man who took great interest in the needs of the farmers and who worked a great deal for the uplift of the farmer. He occupied offices in different farmers' organizations and traveled the state quite a little in the interests of farmers. As a practitioner he was quite a capable man.

Dr. Alexander was related to the Alexanders of Mecklenburg County, whom we all look upon as having been great men in our midst.

DR. J. G. ANDERSON

Dr. James Garrett Anderson, one of Buncombe County's leading physicians, died at Aston Park Hospital, Asheville, N. C., January 10, 1930. He was 48 years of age. He was President of the 10th District Medical Society at the time of his death.

DR. J. G. ANDERSON

Dr. A. C. McCall, Asheville:

I had known Dr. Anderson for about eight years before his death, and I think I knew him for the lovable man that he was and knew most of his characteristics. He was educated at Mars Hill and then went to Wake Forest. He taught school for a while, married, and took up the study of medicine I think at Vanderbilt University. He located at Charlotte but later came back to Asheville and entered into the practice of medicine, which he followed until his death. He was known by as many of the people, I suppose, as any doctor not only in that county but in any of the adjoining counties, and the great esteem in which he was held by the community was attested at his funeral. His death is untimely. He leaves a widow and five children.

DR. JNO. W. BAIRD

Dr. Jno. W. Baird, one of the best known physicians of Madison County, died at his home in Mars Hill, N. C. November 27, 1929. He died from a heart attack, at the age of 44 years.

Dr. Baird was a son of the late Dr. Jno. H. Baird, a physician and a member of the board of trustees of Mars Hill College. Dr. Baird, Jr., was a graduate of Mars Hill College and Tennessee Medical College.

DR. JOHN W. BAIRD

Dr. A. C. McCall, Asheville:

Dr. Baird, who was a graduate of the University of Louisville, practiced at Mars Hill. He came back from college and entered practice there, practicing in the school and in the surrounding country. Truly, "to know him was to love him"; everyone that knew him loved him. He died in the forty-fifth year of his life, having practiced about twenty years, the last ten years of which he practiced under a great handicap. He was stricken with rheumatism about ten years ago and was under a great handicap during the last years of his life. He never refused to make a call to any of the people there, and the community lost a good friend in the death of John W. Baird. He leaves a widow.

DR. WILLIAM PAISLEY BEALL

Dr. W. P. Beall, age 79 years, of Greensboro, N. C., died at St. Leo's Hospital at that place April 26, 1930. He was injured at a railroad crossing near Greensboro March 29th. He was recovering from his injuries nicely but developed hypostatic pneumonia from which he died on the above date.

Dr. Beall was much loved by all who knew him. He was a son of the Rev. Benjamine L. Beall, a grandson of Rev. Jesse Rankin and a great-grandson of Rev. William Paisley.

The greater part of Dr. Beall's long life had been passed in industrious practice of his profession, a service of administration which had few counterparts. He had builded himself a splendid abiding place in the esteem of the people of the community where he began his life's work. His experience, his contact with humanity in that most revealing relation of physician and patient, had ripened a kindly philosophy, which saw and reflected the beautiful. In his profession he had held many honors. He was for many years and until the time of his death an Honorary Fellow of this Society.

DR. WILLIAM PAISLEY BEALL

Dr. C. W. Banner:

Dr. William Paisley Beall, long a leader in the medical profession in Greensboro, was born in Iredell County September 20, 1850. He died in Greensboro May 25, 1930, in his 80th year. Into that span of almost four score years was packed a wealth of accomplishment. In that period he rendered the full measure of devoted service. Statistical information and biographical facts cannot fully convey a realizing sense of the effectiveness with which he wrought. No eulogy can adequately de-

scribe the profound influence which he exerted as physician, as citizen, as friend. For fifty years a member of the Medical Society of the State of North Carolina, he evidenced unflagging interest in its programs, its aims, its concepts. In his various public contacts there was unfailing determination to adhere to fine standards, unwavering interest in the welfare of others was a characteristic trait.

The early education of Dr. Beall was received at Finley School, an academy of high standing at Lenoir. His father, Rev. Benjamin L. Beall, had been largely instrumental in founding that school. The influence of his father and his mother, Mrs. Mary Paisley Rankin Beall, in the sphere of religious development was a vital thing. He possessed "the goodly heritage of a godly parentage." His father organized the Lenoir Presbyterian Church and served as its pastor many years. Dr. Beall was a grandson of Rev. Jesse Rankin, who also was a Presbyterian minister. He was a great-grandson of Rev. William Paisley, who founded the First Presbyterian Church in Greensboro. He was an elder and a charter member of Westminster Presbyterian Church in Greensboro. His fealty to what he conceived to be his duty was demonstrated time after time.

In 1879 he was graduated with honors at Jefferson Medical College, Philadelphia. In the same year he was licensed as a physician and began the practice of his profession in Greensboro. In the same year he joined the Guilford County Medical Society and the Medical Society of the State of North Carolina. He was the oldest member of the Guilford County Medical Society, of which he had ably served as President. At a meeting of that organization last year a handsome watch, appropriately engraved, was presented to Dr. Beall in recognition of his long, active interest in the Medical Society of the State of North Carolina over a period of half a century and in evidence of the esteem of other members of the society. From time to time papers had been read by Dr. Beall at annual meetings of the State Society. In 1895, 1896 and 1897 he was a member of the North Carolina State Board of Health. For many years he was consultant at North Carolina College, Greensboro. At one time he was the Guilford County physician.

Dr. Beall also was much interested in literary activities. For a number of years he was an intimate friend of William Sidney Porter (O. Henry), noted short story writer. He was a lover of nature, especially of flowers. He was regarded as a philosopher of splendid type. He also possessed much business acumen. For 23 years he had been a member of the board of directors of the Gate City Building & Loan Association; for five years he had been president of that organization.

The work of Dr. William Paisley Beall as general practitioner is happily recalled by a large number of people. The confidence of his patients was justified in many ways. The effectiveness with which he practiced his profession was well known in the community in which he had lived 50 years and in important concerns of which he had become such a vital part. His ministrations in behalf of patients often earned a large measure of gratitude. In him was found the impressive embodiment of the successful family doctor bringing to bear not only

medical skill and training but also highly intelligent and sympathetic interest in the welfare of those whom he served. News of his death evoked many expressions of sorrow. Through the years he made large contributions to the community and the state. It is a source of general gratification to recall the lustrousness of Dr. Beall's service, the beauty of his character, the fine combination of faith and works reflected in his distinctly useful life.

DR. WILLIAM PAISLEY BEALL

Dr. William Paisley Beall answered the inevitable call Saturday, April 26th, and is now in The Secret. Of a mild, quiet temperament and endowed with all those elements which compose the true gentleman. his going was both abrupt and rough, for he was a victim of the ambient automobile. Having been born in 1850 in a few more months he would have been an octogenarian. His looks disclaimed it. Using all those inborn restraints, he had so ordered his life as to conserve all the forces of nature; never having put that in his mouth which stole away his wits. By nature a student, he had acquired a rich fund of many-sided knowledge; but his ardent love, Medicine, most profited by this urge, and in this field he always found rich pasturage which was absorbed and assimilated greedily, making him an all-round, thoroughly equipped doctor. Because of this and because of his genial, sympathetic nature, he had acquired and always enjoyed perhaps the best practice of his city for fully half a century. Few men of our ranks were ever held in higher esteem by a wide clientele and the people generally.

He was graduated from Jefferson Medical College in 1879 and joined the State Medical Society at its first meeting thereafter. He was born in Lenoir. After graduation he settled in Greensboro and became associated with that upstanding man in medicine, Dr. James King Hall, a relationship which was maintained until the death of Dr. Hall. No firm ever had fuller confidence of its constituents. "Will" Beall, as he was universally called, was a contemporary of Sidney Porter, known to the world as "O. Henry," and was a warm personal friend of that *rara avis* in the literary world. Their interchange of letters compose first place in all biographies of that distinguished author: they were boys together. Young Porter in the drug store and the young Beall in the field, they made a rare medical team.

Dr. Beall was appointed to membership on the N. C. State Board of Health in 1894, by Governor Carr, and served till 1897.

It was my good fortune to have been a college mate of Will Beall at Jefferson, where the tendrils of friendship first entwined themselves about my nature which the passing years have served but to strengthen and tighten. There was between us a constant warm flow of heart responsive to heart.

With the claim that he was a distinct credit to the most cherished idol of his soul, Medicine, in his day and generation, I will only add the hope that from his consistent walk and devotion to his Lord and

Saviour, the Great Physician and great Head of the Church, he has gained entrance into that house made and prepared for the redeemed of all ages, eternal in the Heavens.

—*Thos. E. Anderson.*

A TRIBUTE

BY

The *Greensboro Daily News*

DR. BEALL

Dr. William P. Beall had been left over to us from Arcady. The quiet town of elm-bowered streets where life ran along a placid stream, every man, woman, child and dog was known to every other, was as real to him as the Greensboro in which his eyes last looked; for memory is under no bonds to chronology. The links between the community's present and its past in which Dr. Beall and Sidney Porter and their comrades were looking eagerly toward the future are few; most of them have made concessions to relentless time and its infirmities and are taking their evening rest in seclusion. Dr. Beall continued to claim a share in, to belong to, the present; and his wonderful constitutional endowment seemed to promise years of continuance.

The greater part of this long life was passed in industrious practice of the healing art, a service of administration which has had few counterparts. He had builded himself a splendid abiding place in the esteem of the people of the community where he began his life's work. His experience, his contact with humanity in that most revealing relation of physician and patient, had ripened a kindly philosophy, which saw and reflected the beautiful.

His was a many-sided life. In his profession he had held many honors. He was a figure in the town's business. He cherished the fame that had been won by his friend, O. Henry, and the distinction that fame brought to the community, his own cultural attainments were marked. There are few whose going away would take somewhat out of the lives of so many.

DR. W. T. H. BRANTLEY

Dr. W. T. H. Brantley of Bethel, N. C., Pitt County, died of acute nephritis in a hospital in Roanoke Rapids, N. C., May 15, 1929.

Dr. Brantley was a young man, a splendid citizen and a good physician. He had established an excellent practice and held the esteem of the citizens of his community.

DR. W. T. H. BRANTLEY

Dr. M. T. Frizzelle, Ayden:

Dr. Brantley was a young practicing physician, recently located in Bethel, having been there only six or eight months when death took him. He connected himself with our society immediately after locating in Bethel. He made a very favorable impression on the people of the county; all those who knew him admired him very much both as a citizen and as a physician.

DR. ZENO BROWN

Dr. Zeno Brown, age 69, died suddenly, at his home at Greenville, N. C., on January 15, 1930.

Dr. Brown had been in declining health for several years and had retired from the active practice of his profession. He was a native of Greenville and spent virtually his entire life in that city. While in active practice, Dr. Brown was one of the most prominent members of his profession in that section.

DR. ZENO BROWN

Dr. M. T. Frizzelle, Ayden:

Dr. Brown was an elderly man, being probably seventy years of age. Years ago he was active in the profession but for the last eight or ten years of his life had been retired. He was a most useful man, of large influence, a devoted father, a good citizen, and generally beloved by all who knew him.

ZENO BROWN, W. W. DAWSON, C. J. ELLEN

RESOLUTIONS OF RESPECT

The following resolutions were adopted January 16, 1930, at a meeting of the Pitt County Medical Society:

Rarely indeed does any society of men feel the hand of fate so heavily as the Pitt County Medical Society has since our meeting in December. During that brief period of time three of our beloved members have passed on, to meet with us no more.

On January 16th, Dr. Zeno Brown, in the fullness of his three score and ten years, made the journey to that Bourne, whence no traveler returns, leaving behind him the precious heritage of the memory of a life honorably and usefully spent in the service of the Master, and for the betterment and relief of his fellow man.

On January 2nd, Dr. William Walter Dawson, in the very midday of his usefulness, when his invaluable services to his state and his country and his profession, were most highly appreciated, passed on, leaving a void in his several spheres of activity, that will be hard indeed to fill.

On January 11th, Dr. Cicero Jasper Ellen, in the early noonday of his radiant, consecrated and invaluable life, left us, like one who "Draws the drapery of his couch about him, and lies down to peaceful dreams," and passed to that land beyond the "Sunset's radiant glow."

Therefore, Be It Resolved: That while the dispensations of Providence are beyond our understanding, and leave us inclined to ask the question, "why?" we bow in humble submission, knowing that with them, all is well.

That in the passing of these men, the State and County have lost faithful servants, the value of whose services were beyond estimation.

That the Pitt County Medical Society has lost some of its most faithful, most helpful, and most beloved members, and that their lives and examples should be an inspiration to us in the future.

That we assure the bereaved families, that we sorrow with them, and offer our most sincere sympathy.

That these resolutions be spread on the minutes of the Society. That a copy of these resolutions be sent to the several bereaved families and to the Greenville papers.

JENNESS MORRILL, M.D.,
LOUIS C. SKINNER, M.D.,
SELLERS M. CRISP, M.D.

DR. W. G. BYRD

Dr. W. G. Byrd, 55 years of age, died suddenly of a heart attack, in the office of the Superintendent at the State Hospital, near Goldsboro, October 25, 1929. He was a member of the State Hospital Staff, having come to this state from Winona, Miss.

Dr. Byrd served overseas with the American Army in the World War, was gassed while in action and had never completely regained his health. He was held in high esteem by those who knew him.

DR. W. G. BYRD

DR. R. S. MCGEACHY, Kinston:

Dr. Byrd was a native of Mississippi and had not been in this state very long. He was a World War veteran, having served in France. He was gassed while in service in France and never fully recovered. For years after the war, in fact up until his death, he had periodic attacks of cardiac asthma, and he suffered more or less all the time without complaint or murmuring. He knew he had a rather serious heart trouble but never let it worry him.

Dr. Byrd was always a man who served his friends to the very limit. He really died while on duty at the Eastern Carolina Hospital (for the colored insane). He had driven over to Kinston to tell me something that he thought would be to my interest, then he ate a hearty meal and went with a companion and fellow-worker at the institution into the hospital, was taken suddenly ill, and died in a short time.

Dr. Byrd was licensed in this state and was a member of the State Society and was an unusually fine man.

DR. FRANKLIN CARTER

Dr. Franklin Carter, age 83, a well-known physician, died at his home at Stokesburg, N. C., October 26, 1929.

Dr. Carter had been in declining health for the past two years. He is survived by his wife, three sons and three daughters.

DR. JAMES EDWIN CATHELL

Dr. James Edwin Cathell, of Moncure, N. C., died suddenly in a Sanford Hospital, January 6, 1930, aged 52 years.

Dr. Cathell, who was a native of Salisbury, Md., located at Tyro, N. C., in 1898 where he remained until 1918, when he removed to Wilmington, N. C., later moving to Moncure, N. C., where he resided for the past six years. He had been in ill health for several years and died of a heart attack.

DR. H. IRWIN CLARK

Dr. H. I. Clark, age 73, died at his home at Scotland Neck, N. C., April 17, 1930, from heart trouble. He had been ill for several weeks.

Dr. Clark had practiced medicine for 51 years. He was a son of Gov. Henry T. Clark and Mary Parker Clark and was born in Tarboro, April 19, 1857. He was a Mason and a past grand master of the Grand Lodge of North Carolina.

DR. H. I. CLARK

Dr. R. S. McGeachy, Kinston:

I had some service with Dr. Clark in the National Guard and attended an officers' training school with him. Dr. Clark was an unusually fine man and had the keenest sense of humor I think I have ever known; he kept us all boosted up, though he was older than most of us. I found him a very charming man, a man of unusually fine personality.

DR. H. I. CLARK

Dr. James M. Parrott, Kinston:

I am not at all prepared to pay tribute to Dr. H. I. Clark, and I am glad Dr. McGeachy called the attention of the Society to him. He was a fine citizen, a devoted doctor, a loyal friend.

I want to suggest that Dr. Clark's friends be allowed to forward suitable tributes before the Transactions go to press. Of course, Dr. Clark has just recently died, and that accounts for the fact that none of us are prepared to pay proper tribute now.

DR. L. V. CLONINGER

Dr. L. V. Cloninger, age 45, a well-known physician of Statesville, N. C., died in Charlotte, N. C., November 2, 1929.

Dr. Cloninger was a bachelor and had practiced medicine in Statesville for the past 20 years.

DR. W. F. CROUSE

Dr. W. F. Crouse, age 40, of Crouse, N. C., died at Cocasola, in the Panama Canal Zone, August 11, 1929.

Dr. Crouse was in charge of the United States Naval Base Hospital at Cocasola at the time of his death. He is survived by his widow and one child. Interment was in the cemetery at St. Mark's Lutheran Church near Crouse.

DR. A. P. DAVIS

Dr. A. P. Davis of R. F. D. 1, Walkertown, N. C., died at his home April, 1930.

DR. A. P. DAVIS

Dr. G. C. Cooke, Winston-Salem:

Dr. Davis was graduated in medicine twice, the first time from ..... University. He practiced for some time in Winston-Salem following that and afterwards taught school. He was one of our county's educators. Then he went to George Washington Uni-

versity and took the work all over again, graduating the second time about 1909. He practiced general medicine in Winston-Salem until two years ago, when he retired. He was a great man in that he was one of the best readers of our day; he had one of the best libraries in the city. He was thoroughly versed in medicine. Although he never openly accepted the Christian faith, he knew more about the Scriptures than any other man in our community. He never married, but he raised two families of children, educating them and providing for them. He was a man who will be remembered in our community for a long time.

DR. W. C. DAVIS

Dr. William Caldwell Davis, 72 years of age, for 4½ decades a prominent physician at Summerfield, N. C., died at his home at that place January 15, 1930. He leaves his widow and four sons.

At all times, he evidenced a keen interest in public affairs, and was recognized as one of the leaders of his community.

DR. WALTER WOOTEN DAWSON

Dr. W. W. Dawson, age 55, died suddenly at Grifton Flat Ridge Game Preserve near Kinston, N. C., January 2, 1930.

DR. W. W. DAWSON

Dr. W. H. Dixon, Kinston:

Dr. Dawson committed suicide sometime in January. It had been my privilege to know him since 1895. We were at Chapel Hill together. He left Chapel Hill after taking a three-years' course there and went to the University of Maryland, from which he graduated. He located in Grifton for the practice of medicine in about 1897. I saw nothing of him until some years later, when I moved to Ayden; then we were thrown together.

Dr. Dawson had an immense practice, and he also had quite a large farm to look after. In addition, he was county commissioner for several years and chairman of the board, resigning at one time but later accepting the commissioner's position again. He was a wise counselor. always. He could always make up his mind very quickly about any matter on which he wished to reach a decision. At the Wrightsville Beach session of the Society, in 1926, he was elected a member of the State Board of Medical Examiners and served in that capacity up to his death.

Dr. Dawson had attended a meeting of the executive committee at the Caswell Training School, then going by Kinston. On his way home his car left the road and crashed into a pole. He left his car and walked home but the next day was brought back to Kinston, when it was found he had a fracture of one of the cervical vertebrae. On the day the cast was removed he took his gun and went down to his hunting lodge, and later he was found there; he had shot himself through the heart. He had remarked the day before that he thought his mind was not right, that he could not think.

Dr. Dawson was a wise counselor and a splendid physician.

DR. W. W. DAWSON

Dr. G. G. Dixon, Ayden:

It seems to me that in speaking of Dr. Dawson I must say, although he was a kinsman of mine, there was something about him that is beyond the power of words to describe. All those who knew Dr. Dawson as I knew him and those that were associated with him knew that he was a man to be loved. I wonder that Dr. Jim Parrott and Dr. Cy Thompson have not told us in their beautiful words, that only those two men in this Society know how to use, about our friend Dawson. As Dr. Dixon has told you, he came to his untimely end, I think, as the result of an accident. But had he lived to be an old man he could not have been a more beloved man; had he lived to a mature age he could not have done a greater work than he had already done. He had not been known so very long outside of his own community, because he was a man that did not seek public favor. Dr. Dawson was a man—a man's man. If I were going to express an opinion of Dr. Dawson I do not know any words that would be more applicable than the words of the poet in Abou Ben Adhem:

> Abou Ben Adhem (may his tribe increase)!
> Awoke one night from a deep dream of peace,
> And saw within the moonlight in his room,
> Making it rich and like a lily in bloom,
> An angel writing in a book of gold:
> Exceeding peace had made Ben Adhem bold,
> And to the presence in the room he said,
> "What writest thou?" The vision raised its head,
> And, with a look made of all sweet accord,
> Answered, "The names of those who love the Lord."
> "And is mine one?" said Abou. "Nay, not so,"
> Replied the angel. Abou spoke more low,
> But cheerily still; and said, "I pray thee, then,
> Write me as one who loves his fellow-men."
> The angel wrote and vanished. The next night
> It came again, with a great awakening light,
> And showed the names whom love of God had blessed,—
> And, lo! Ben Adhem's name led all the rest!

Friends, in my opinion that fits Walter Dawson.

DR. J. F. DICKS

Dr. J. F. Dicks died at his home in Stoneville Sunday morning, March 23, 1930, his birthday. Although he had been in feeble health for sometime, yet his death came unexpectedly. He is survived by a wife and one son.

DR. C. J. ELLEN

Dr. C. J. Ellen, age 43, died at his home in Greenville, N. C., January 11, 1930.

Dr. Ellen was an eye, ear, nose and throat specialist and one of the most beloved citizens of his community. His death was sudden, having been caused by heart disease.

DR. J. H. ELLINGTON

Dr. J. H. Ellington, age 79, died at his home at Sandy Ridge, N. C., May 24, 1929.

Dr. Ellington located at Sandy Ridge 53 years ago and had been actively engaged in the practice of medicine the entire time, never failing to answer a call except for a period during three weeks' illness.

DR. OLIVER GREEN FALLS

Dr. Oliver G. Falls, age 73, a retired physician, died at his home in Kings Mountain, April 8, 1930.

Dr. Falls was an active practicing physician in the Kings Mountain section for many years and was also prominent as a business man.

DR. OLIVER G. FALLS

Dr. D. A. Garrison, Gastonia:

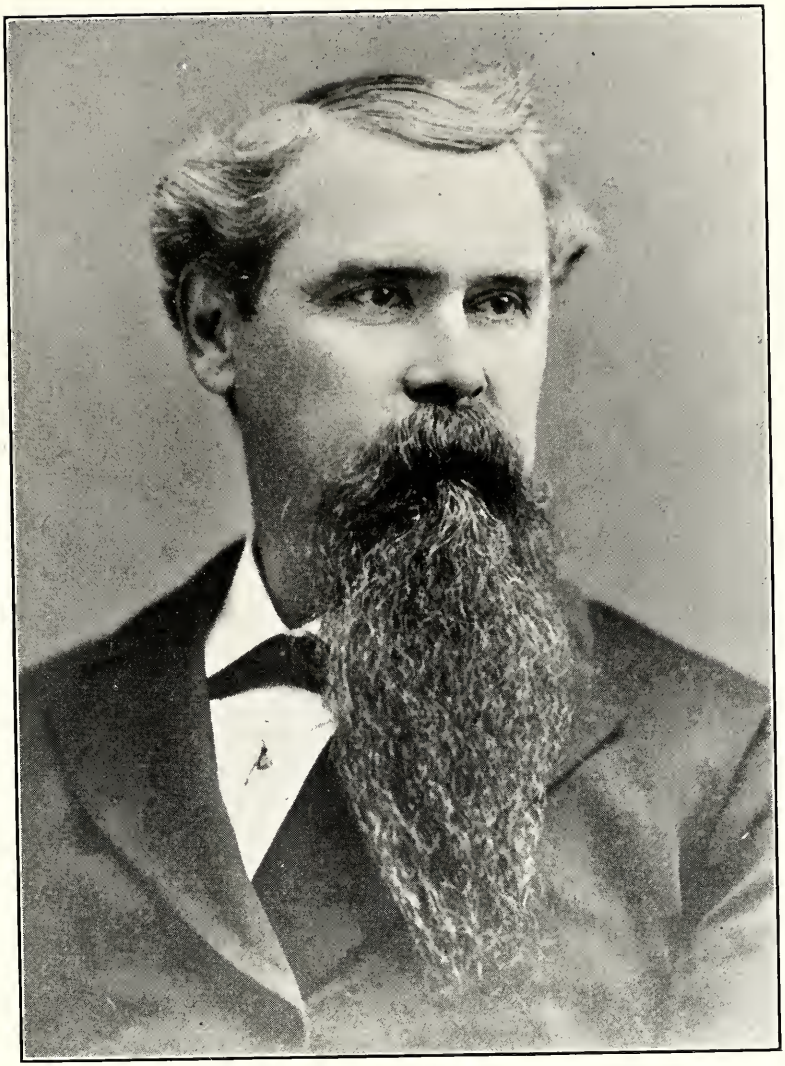
I want to say a word about Dr. Oliver G. Falls, of Kings Mountain. Dr. Falls graduated in medicine in 1888, going then to South Carolina, where he practiced medicine for about eighteen years and did well. He had a fine work and was much beloved by his people. I believe he was at Woodruff, S. C. He spent his life largely among his people, who were operatives in the cotton mill there, and took care of them; and they loved him, honored him, and respected him in every way. He decided a little later that he would give up the practice of medicine (about twenty-four years ago), and he came to Kings Mountain and built a cotton mill, of which he was secretary and treasurer and general manager. He was wonderfully successful in that business. He made lots of money and was liberal with his money to the people that he liked—and he was about as strong in his likes and dislikes as any man I ever knew. He was above any little things that a man might do. I was closely associated with him and knew him well and saw a great deal of him after he came back to Kings Mountain, as I was only twelve miles away. For eight years he was chairman of the board of county commissioners of Gaston County, showing that he was a real business man; and he worked incessantly along that line. He was also an elder in the Presbyterian Church, as his father was before him. He died in the faith and was buried with the greatest honors ever accorded any man buried in Kings Mountain in my knowledge.

The reason he quit practicing medicine is rather unusual; he said he knew absolutely nothing about surgery and that there is nothing in drugs and that he would quit giving them to people.

DR. LEWIS M. FOWLER

Dr. Lewis McCargo Fowler, age 27, was drowned in the Mississippi River June 29, 1929.

Dr. Fowler was a resident of Greensboro, N. C., but at the time of his



A MAN*

Only a few weeks ago there died in Charlotte a physician of the old school. Few deaths have caused a sense of personal loss to so many people in one community. The physician had to his credit half a century's experience and a noble life. He belonged to that school of medicine that does not limit attention to the suffering physical being, but which through kindly words and wise counsel comforts the stricken soul in its hour of need and grief. Courteous, big-hearted, calm and gentle his genial presence was felt the moment he entered the home. It was not so much magnetism as it was the knowledge of his sincerity that made his patients love him. He was a friend.

Of a distinguished North Carolina family, in his home was bred integrity, honor, worth and gentility, and he could hardly escape the heredity of these; but

* An editorial by N. G. Gonzales, Editor of the *State*, Columbia, S. C., on Sunday, August 25, 1907.

it was his own manhood that led him to embrace a life of self-sacrifice, repaid only by the consciousness of duty well done, and at last to meet death with quiet heroism. The Charlotte *Chronicle*, in speaking of him, gives an illustration of his way of life that will appeal to all. Columbia has within the last decade lost two physicians, typical physicians of the old school, and one in circumstances very similar to those of the death of Dr. Graham of Charlotte. The *Chronicle* says:

"Dr. Graham with his untiring skill, knew his condition perfectly. He handled his own case, directing up to the last moment of consciousness, 'Dr. Will' and 'Dr. George' Graham, as to the treatment. Saturday he said to 'Dr. Will' 'Son, give me my glasses,' and after they were adjusted he looked at his hands very closely and said, 'I won't live but a few days.' "

A man of less vitality, less combativeness, less nerve, would have succumbed earlier. Dr. Graham had fought disease for others for nearly fifty years. It was one of his characteristics that he never gave up while there was breath in the body. His physician instinct—this characteristic—marked his last conscious moment. Up to the very last he advised his son and brother what to do for him; what to give him. Throughout his illness, as throughout his long and useful life, he thought of others before himself. He said to his son and daughter-in-law who had nursed him so constantly: "I am giving you so much trouble."

His life was a perfect example of a fight for existence against obstacles that would have proved unconquerable to most men. Dr. Graham, however, struggled not only for his own existence, but day after day hurried to the bedsides of others to be with them and their families in the hour of trial.

As early as 1870 he contracted a peculiar malady that often caused him to choke when eating. The trouble seemed to be an obstacle in his throat—more properly almost between the throat and the stomach. He consulted the foremost surgeons and diagnosticians in America, but the disease was beyond their practice. All advised against operation. Dr. Graham returned to Charlotte knowing the serious nature of his malady, and knowing also that it was practically incurable, determined to live his life out like the soldierly man that he was. All through his days of work he fought but in vain against the ambushed and terrible foe. For some days before he died he could not take food or water.

And now Charlotte people think of him, and their eyes fill with tears as they remember his kindly, gentle ministrations. How often he had crossed their thresholds. Sometimes as he left the closing of the front door was echoed by a pitiful little wail, the cry of the little stranger in the new world, sometimes when he drove away, the place of his carriage at the sidewalk was soon taken by the undertaker's grim wagon. He was there to comfort the hysterical wife of a disgraced husband, he was a guest of honor at the marriage of two whom he had known as children.

It was he who knew the troubles, had seen the skeletons in the closets, who realized the true worth of the unappreciated, and who saw life bared to its core, the primal emotions and passions as familiar to him as the ordinary duties of the day. No wonder they loved him. And on he passed through his life. No wonder they loved him. And on he passed through his life of self-denial, rising at any hour of the night from a sleepless pillow, or from a brief respite won from pain, to venture forth into a night of rain and sleet, going without proper food for days at a time, often without sleep or changing his clothing, in among the sick and dying. Each morning he rose early, ate his simple breakfast and was off to work returning at nightfall for a hoped-for evening with his family, but only to be summoned again.

And through it all he thought not of himself but of others. This was the secret that made him loved. He lived for others. He was a man.

This is not a eulogy of Dr. Graham. But his life was so typical of the physicians of the old school that it has its lessons and its stimulus for us all.

Times have changed, and the physician of this type must, perhaps, pass with the old order. The present generation of physicians necessarily belongs to another school. This is an age of hurry and bustle and advanced methods. There are just as good men and true in the ranks of physicians who, if called on, would make quite as heroic sacrifices as ever their fathers did. But the demand does not come in the same way as it once came. Our changed customs have removed both the minister and the doctor farther from us. The physician will never again, perhaps, no matter how wonderful his skill, hold his ancient and intimate place in the family of his patient.

death was a member of the staff of the Mayo clinic, of Rochester, Minn. He was a graduate in medicine from the University of North Carolina and the University of Pennsylvania.

DR. R. H. GARY

Dr. R. H. Gary, of Murfreesboro, N. C., died at home at 5:00 o'clock A.M., October 26, 1929, death being caused by paralysis.

DR. G. M. GOLD

Dr. G. M. Gold, of Shelby, N. C., died July 2, 1929, at the Rutherford Hospital while undergoing a physical examination.

The veteran physician practiced medicine in Shelby and Cleveland County for 48 years prior to retiring a few months before death. He was county commissioner at the time of his death, and prior to moving to Popeville he was a member of the City Council of Shelby.

DR. WILLIAM A. GRAHAM

Dr. W. A. Graham, age 64 years, died at his home in Charlotte, N. C., January 21, 1930, following an extended illness.

He was a son of the late Dr. Joe Graham and a grandson of William A. Graham, former governor of North Carolina.

DR. W. A. GRAHAM

Dr. P. M. King, Charlotte:

Dr. W. A. Graham died of apoplexy this spring at about the age of sixty-five, after having been retired some fifteen years. Prior to that time he and his father, Dr. Joseph Graham, practiced under the firm name of Graham and Graham; and they were among the most prominent, if not the most prominent, physicians in Charlotte. Dr. Joseph Graham died some years ago, and a short time after that Dr. W. A. Graham retired on account of his health. He was one of the most beloved men in the entire community.

DR. T. G. HAMRICK

Dr. T. G. Hamrick, pioneer hospital builder and a practicing physician in Cleveland and Rutherford County for 35 years, died at his home in Shelby, N. C., April 15, 1930, age 75 years.

Dr. Hamrick was a deacon in the Baptist Church for 40 consecutive years.

DR. ROMEO HICKS

Dr. Romeo Hicks, a prominent physician and Confederate veteran, died at his home in Henrietta, N. C., February 3, 1930.

Dr. Hicks had practiced medicine in Rutherford County for the past 20 years. He practiced his profession in Spartanburg, S. C., before coming to Henrietta.

DR. J. E. HOBGOOD

Dr. J. E. Hobgood, a member of the medical staff of the State Hospital at Morganton, N. C., died at his home in Morganton, De-

cember 20, 1930. The cause of his death was cerebral hemorrhage, being desperately ill from the time he was stricken. He was a son of the late Dr. F. P. Hobgood of Oxford, N. C. His wife and one son survive him.

DR. O. W. HOLLOWAY

Dr. O. W. Holloway, age 54, a prominent physician, died suddenly of a heart attack at his home in Durham, N. C., October 2, 1929.

DR. O. W. HOLLOWAY

Dr. L. S. Booker, Durham:

Dr. O. W. Holloway, who died in Durham at the age of fifty-two years, of angina pectoris, was a member of the Durham-Orange County Society. He was born in Wake County and graduated from the Medical College of Virginia. He first located in Granville County and did a wide country practice there until he moved to Durham in 1920. He did general practice in Durham and had an extensive practice. He was a physician of the old school and had a multitude of friends, being a very popular man in the city of Durham. He was a deacon of the First Baptist Church of Durham and a member of the staff of Watts Hospital. He leaves a widow and a son and a daughter.

DR. J. G. HORD

Dr. J. G. Hord, a prominent physician of Kings Mountain, N. C., died in a hospital in Charlotte, N. C., January 14, 1930, age 65 years.

DR. J. G. HORD

Dr. D. A. Garrison, Gastonia:

I knew Dr. Hord for quite a number of years. He was an incessant worker and thought he had not time to attend medical meetings. Not a half dozen times did I see him at a county meeting, yet he paid his dues. He said his time was more important amongst his people. He did not attend meetings regularly at all; I don't think I ever saw him at a state meeting; yet he was a man who did a wonderful amount of good. He was never called, day or night, rain or shine, that he did not go where he was needed. At the time of his death he was sixty-five years of age.

Dr. Hord graduated from the University of Louisville in 1892, but I do not know just when he was licensed. Notwithstanding the fact that Dr. Hord had a very humble beginning in his work, he rose above his fellows; and he deserves most wonderful credit for going so far in his profession. He was not only a good doctor and an absolutely incessant worker but a great churchman. He practically never missed a service, and he was elder in his church, which was the Associate Reformed Presbyterian. He was very liberal and very attentive to his pastor.

DR. GEORGE H. LAMBERT

Dr. G. H. Lambert, 58 years of age, died at Asheville January 24, 1930.

DR. HARRY W. LEE

Dr. Harry W. Lee, age 30, of Kinston, N. C., and a graduate of Wake Forest College and Jefferson Medical College, Philadelphia, Pa., died in a hospital at Woodburg, N. J., December 15, 1929. He is survived by a widow and one child, also his mother, Mrs. Mary Lee, of Kinston, N. C., and a brother, Dr. Michael Lee. The funeral was held at Kinston, N. C., December 18, 1929.

DR. ABRAM LYDAY

Dr. Abram Lyday died at his home in Penrose, N. C., during the past year.

No date.

DR. A. A. MacDONALD

Dr. A. A. MacDonald, of Jackson Springs, N. C., died at Central Carolina Hospital, Sanford, N. C., September 17, 1929.

DR. A. A. MacDONALD

Dr. Blair read the following memorial:

DR. AUGUSTUS A. MACDONALD

Dr. A. A. MacDonald was born March 25, 1877, and died September 15, 1929, at the age of 52 years.

Dr. MacDonald was ill for a brief period of weeks before his death, which took place at the Central Carolina Hospital in Sanford. Death was due to a complication of diseases.

Dr. MacDonald was born in Moore County, near Jackson Springs, at which place he practiced medicine up to the time of his death, after graduation from the North Carolina Medical College at Charlotte, in 1905.

He was a genial soul, making friends and holding their friendship. His kindly smile and greetings of good cheer will be remembered by many of us who knew him well.

Dr. MacDonald was a general practitioner, with good practical sense, and was untiring in his efforts to relieve human suffering. His kindly spirit and willingness to help in cases of stress stamped him as a worthwhile fellow.

His interest in community welfare was evidenced by his various activities in promoting local community affairs. He was an esteemed member of the Masonic fraternity and also an elder in the Jackson Springs Presbyterian Church.

Dr. MacDonald was married to Miss Maude Carlton of Springfield, Mass., who, with a son, Carlton, and daughter, Mrs. Wayland Blue, survive him.

He will long be remembered by a host of friends and patients who knew him and loved him.

Dr. MacDonald was also singly honored by serving two terms as President of the Moore County Medical Society and was active in medical circles as well as being a member of the State Medical Society and the American Medical Association.

DR. ROBERT J. NOBLE

Dr. R. J. Noble, age 77 years, died at his home in Selma, N. C., April 27, 1930. He was injured in an automobile wreck some weeks prior to his death and at his advanced age was unable to overcome the same.

Dr. Noble was a worthy physician, loved by all who knew him, and was interested in the common welfare of his community. He was local surgeon of the Coast Line and the Southern Railroads. Was chairman of the Board of Trustees of the Selma High School. He was a consistent member of and steward in the Methodist Episcopal Church. He was an Honorary Fellow of this Society.

OBITUARY OF DR. R. J. NOBLE

By Dr. J. C. Grady, Kenly

Dr. Noble died from injuries sustained in an automobile accident near Clayton, N. C., on April 19, 1930, when his car skidded on a wet road and turned over, causing injuries for which he was taken to the Smithfield Hospital where he developed traumatic pneumonia from which he died several days later.

Dr. Noble was born in Louisburg, N. C., October 16, 1853, and he was 77 years old.

He read medicine under the late Dr. Vick of Selma, N. C. He graduated in medicine at the Louisville Medical College of Kentucky in 1875 and located in Selma, N. C., during that same year for the practice of his profession, where he prosecuted the practice with advantage to himself and his patrons all the balance of his unusually long life, except for four years that he practiced in the adjacent town of Smithfield, only four miles away. Altogether, he practiced medicine 55 years and was still doing some practice at the time of his death. It was said that he was hurrying home at the time of the accident to see an indigent. He was an Honorary Fellow of the Medical Society of the State of North Carolina.

Dr. Noble was married on the 16th of December, 1880, to Betty Devara Moore. To this union were born five children, four of whom are now living: Dr. Robert P. Noble of Raleigh, Judge A. M. Noble of Smithfield, N. C., Walter Moore Noble of Brawley, Cal., and Miss Annie S. Noble of Selma, N. C.

He was a member of the building committee that erected the Masonic Temple in Raleigh, North Carolina, and was a warm supporter of the Oxford Orphanage.

Dr. Noble became a Royal Arch Mason in 1892 in the Goldsboro Chapter No. 29, and was elected a Knight Templar in 1898 in Mt. Lebanon Commandery No. 7 of Wilson, N. C. He became a Shriner in May, 1898. He was a local surgeon for the Southern and A. C. L. Railways in Selma at the time of his death. He had been mayor of his town, served on the school board of the town of Selma, and at one time was Grand Master of the Grand Lodge of Masons of North Carolina Jurisdiction. He was elected Potentate of Oasis Shrine Temple of Charlotte, N. C., in 1919. He was a member of the Local and State

Medical Society, always attending these deliberations where he will be greatly missed. He was a member of the Kiwanis Club of his town.

He became a member of the Methodist Church of Selma in 1894, and was, at all times, a faithful and consistent member, serving for many years as steward of that church, being always interested in every good word and work.

He was a lifelong Democrat, and was always interested in the success of his party, and the upbuilding of his community in every way possible. Dr. Noble will be greatly missed, and his place in society will be hard to fill.

Truly a good man has gone from among us, but he has left a record well worthy of our emulation, and a heritage of which his children should indeed be proud.

Dr. Noble's prototype can perhaps only be found in the "Hero of the Bonnie Briar Bush," Dr. Ian McLaren. As Edwin Markham said, "He built his house by the side of the road and was ever the Friend of Man."

He was an old-time country doctor,
  With ideals lofty and high,
And in no kind of weather
  Was he deaf to the sick man's cry.

The cry of an expectant mother,
  Or an infant's wail of pain,
Would send him out in the darkest night,
  Regardless of loss or gain.

He knew not rank or station,
  In fighting disease or death.
His thought was to cure and comfort
  To the last expiring breath.

No night too dark or rainy,
  No weather too hot or cold;
If there was pain or suffering,
  So the story of him is told.

He spent his life in service,
  Faithful to his clientele;
And the loyalty of his patients,
  Proved that he served them well.

He never acquired great riches,
  But something far greater still:
The love of a grateful people,
  Tribute to his wondrous skill.

The old-time doctor is passing,
  His ranks are getting thin;
He'll soon be only a memory,
  A type that once has been.

Of Dr. Noble, now he's gone,
  Truly it can be said:
That none were bound by closer ties,
  Or will be remembered longer dead.

That he served his kind and country well,
  Through life's short fitful span
Is the greatest tribute that can be paid
  To the memory of this noble man.

DR. EDWARD PERCY ODENHAL

Dr. E. P. Odenhal, age 55, died at Oteen, N. C., April 27, 1929.

Dr. Odenhal graduated in medicine from the University of Maryland in 1895. He was a medical officer in the United States Army and had been in charge of Veterans' Hospital No. 60 at Oteen for some-

DR. HOWARD REEDY

Dr. Howard Reedy, age 75, pioneer physician of Rowland, N. C., died at his home July 12, 1929, after a brief illness.

Dr. Reedy had lived an active and useful life and was one of Rowland's best beloved physicians.

DR. J. G. REYNOLDS

Dr. J. G. Reynolds died at his home in Clinchfield, N. C., March 10, 1930.

Dr. Reynolds was a prominent citizen of the Clinchfield community. He was born and reared in Madison County, but moved to Marion in 1915 and located at Clinchfield, where he established a large practice.

DR. WILLIAM T. SHIPP

Dr. W. T. Shipp, age 70, of Valdese, N. C., died suddenly in his office while administering to a patient, April 17, 1929.

Dr. Shipp was a native of Gaston County. He was a graduate of medicine in the University of Louisville and practiced his profession in Kansas and Oklahoma for a number of years, coming to Newton, N. C., some twelve years ago, moving to Valdese three years ago, where he was practicing his profession.

DR. HILTON M. SHUFORD

Dr. H. M. Shuford of Hickory, N. C., was found dead in bed at Meadow Brook, W. Va., September 25, 1929.

Dr. Shuford was a son of Mr. and Mrs. E. L. Shuford of Hickory, and a brother of Dr. Edward L. Shuford of Asheville. He was educated at the State University and Tulane University and for several years past had practiced medicine at Meadow Brook.

DR. OWEN SMITH

Dr. Owen Smith, age 49, died of pneumonia at High Point, April 26, 1930.

Dr. Smith was a graduate of Jefferson Medical College and for a number of years was a surgeon in Biltmore Hospital. He located in High Point in 1916 and had made for himself a splendid name as a general surgeon.

DR. ROBERT W. SMITH

Dr. R. W. Smith, age 61, of Hertford, N. C., died at his home September 7, 1929, following a stroke of apoplexy from which he never regained consciousness.

Dr. Smith was one of the best known physicians in northeastern North Carolina, and is survived by his widow and one daughter.

DR. EDWARD P. SNIPES

Dr. E. P. Snipes, age 76, of Jonesboro, N. C., a leading physician and a well known citizen of Lee County, died at Central Carolina Hospital April 30, 1929. Death resulted from a cerebral hemorrhage.

Dr. Snipes was never married. He was a graduate of the University of North Carolina and Vanderbilt University of Nashville, Tenn.

Dr. Snipes was a physician of the old school. He kept up with modern methods and was noted for his skill as a practitioner. He was a man of the highest character and strictest integrity and honorable in his dealings with his fellow-man. For 48 years he practiced his profession in the Jonesboro community. No night was too dark or weather too stormy for him to respond to calls. The fact that it might be a charity patient made no difference. During these years, not only as a skilled physician, but as a friend and councillor, he endeared himself to the hearts of the citizens of the community. He was an Honorary Fellow of this Society.

DR. CHARLES E. SPOON

Dr. C. E. Spoon, age 48, of Burlington, N. C., died suddenly in his office while administering to patients on July 4, 1929.

Dr. Spoon was a native of Alamance County. He located at Burlington and built up a large practice. He had been suffering from heart trouble for sometime, but did not let his ailment interfere with his practice. He was a member of the Methodist Protestant Church.

DR. JOHN SWEANEY, DURHAM

Dr. John Sweaney was born February 8th, 1858, in Person County, N. C. He was descended from a long line of hardy patriotic forbears, who carved out a home from the wilderness and defended their homes and their country in every war in which their country was engaged. An older brother lost a leg in one of the hard-fought battles of the Civil War.

As a child and a youth Dr. Sweaney was in delicate health and realizing in early life that he was physically unable to stand the hardships incident to the time and the locality he avidly sought every opportunity to gain an education. After getting all that was to be learned in the local schools and being prepared to enter college, he matriculated at Wake Forest in the fall of 1879. He did not complete the course for he was anxious to enter into his life work, that of being a physician.

He received his diploma from the College of Physicians and Surgeons of Baltimore in the class of 1886 and immediately entered into the general practice of medicine at Berea, Granville County, N. C., where he practiced with eminent satisfaction to his very extensive clientele for eleven years. He then moved to Spray, N. C., where he enjoyed a lucrative practice for twenty years. In 1916 he moved to Durham, N. C., where his ability was instantly recognized and he enjoyed an extensive practice until he was forced by ill health to retire about one year before his death.

He died March 23, 1929, of general sclerosis. During his last illness he maintained the same cheerful disposition and the same fortitude that had singled him out among his fellows during his active life. He was married in 1885 to Miss Corrina Day of Granville County, and of this union there are four living children: Mr. Fred E. Sweaney of Durham, N. C., Dr. Hunter Sweaney, an outstanding surgeon of Durham, N. C., and on whom his friends hope and believe that the mantle of his illustrious father has fallen, Mrs. A. E. Langston of Honduras, Central America, and Miss Lois Sweaney of Durham, N. C.

Dr. Sweaney was a gentleman of the old school and a doctor who looked upon his profession as a calling and not as a trade. Owing to his delicate health he was often urged by his friends to take up some specialty for which he was eminently fitted and which would not be such a drain on his physical powers, but to all such appeals he turned a deaf ear, he desired nothing so much as to be the honored and beloved physician, and to him the tears of gratitude from the tired and anxious mother with whom he had watched through the night by the couch of a sick and suffering child were more precious than gifts of frankincense and myrrh.

He spent a long life of seventy-one years in doing good, visiting the sick and assisting in healing the distressed. He exemplified in his life the tenets of the Great Physician, the lowly Galilean, and was a meek and lowly follower of the Christ to the end, and died triumphant in the faith at once and for all delivered to the saints.

He died independent but not rich. He never sought the corruptible things of life that the moth and rust might destroy, but he was always busy storing up the more precious gifts, loyalty to his friends, honest and sincere service to his patients, unqualified patriotism to his country, devotion to his church, and staunch champion of every moral uplift.

He lived an altruistic life, he gave freely of his time, his talents and his strength to the uplifting of humanity and to the alleviating of human suffering, and I think it would scarce be sacrilege to imagine that when he was summoned to his higher service, that the hosts of the redeemed twanged low soft cadences to his entering into his inheritance in that Celestial City whose Maker and Builder is God.

DR. WILLIAM J. THIGPEN

Dr. W. J. Thigpen, age 54, a prominent physician of Tarboro, N. C., died at his home following an attack of double pneumonia, September 30, 1929.

Dr. Thigpen was educated at the State University and Jefferson Medical College of Philadelphia, Pa. He was one of the outstanding men of his community, was a member of the Edgecombe County Medical Society, a member of the State Medical Society, the Fourth District Society and also a Fellow of the American Medical Association.

DR. A. F. TOOLE

Dr. A. F. Toole, age 52,, of Asheville, N. C., died at his home, following a lingering illness, November 4, 1929.

Dr. Toole was a well known physician in his community, being a member of the City Board of Health. He is survived by his widow and two sons.

DR. F. P. TUCKER

Dr. F. P. Tucker, age 75, died at his home in Milton, N. C., December 8, 1929.

Dr. Tucker was born at Advance, Davie County, N. C., but spent most of his life in Caswell. He was truly a physician of the old school. For 40 years he made his calls on horse-back, performed surgery at times in the home, and filled his own prescriptions. He was widely known throughout North Carolina and Virginia, being vice-president of the South Piedmont Medical Society.

DR. WILLIAM H. WADSWORTH

Dr. W. H. Wadsworth, age 38, died at his home in Concord, N. C., June 5, 1929, after an illness of several months duration.

Dr. Wadsworth was one of the leading physicians of the State. He was educated at the University of North Carolina and Jefferson Medical College. He was a member of the Presbyterian Church.

DR. WILLIAM HAINES WAKEFIELD

Dr. W. H. Wakefield, age 74, of Charlotte, N. C., died at his home August 12, 1929, after an extended illness.

Dr. Wakefield was born in Canada but came with his parents to Guilford County in 1881. Here he entered the hardware business and read medicine. On securing his medical diploma, he moved to Charlotte and practiced his profession until he retired in 1924. He was an elder in the Presbyterian Church from which he was buried. He was a specialist in eye, ear, nose and throat work. He was owner and editor of *The North Carolina Medical Journal* for a number of years.

DR. W. H. WAKEFIELD

Dr. A. J. Crowell, Charlotte:

Dr. Wakefield was from Mecklenburg County, a fellow-elder in the Presbyterian Church, and the second man who ever did ear, eye, nose and throat work in our city. I covet the honor and pleasure of getting up the data about him and turning the information over to our secretary.

Dr. Wakefield married a Quaker at Guilford College. He was in Greensboro in business for a few years before taking up medicine.

DR. WILLIAM JOSEPH WALLIN

William Joseph Wallin, M.D., died at his home at Brevard, N. C., February 16, 1930.

Dr. Wallin was born in Ontario, Canada, in 1855, and was in his 75th year. He came to Transylvania County in 1897, and had practiced medicine in this county since that time.

DR. G. S. WATSON

Dr. G. S. Watson, age 85, died at his home at Elon College, N. C., March 4, 1930, after a lingering illness.

Dr. Watson had retired to private life and was a member of the Board of Trustees of Elon College, and until his health failed him was an active member in the Sunday School department. He was a deacon in the Christian Church and is survived by his wife and three children.

DR. A. C. WHITAKER

Dr. A. C. Whitaker, age 56, of Julian, N. C., died in the City Memorial Hospital, at Winston-Salem, N. C., Sunday, December 29, 1929.

Dr. Whitaker was fatally injured in a collision between his car and a service truck about 8:30 A. M. on the morning of his death. His skull was fractured and he never regained consciousness.

DR. ASA CORNELIUS WHITAKER

Dr. C. S. Tate:

Dr. Asa Cornelius Whitaker, age 56, a prominent physician of Guilford and Randolph counties, died from injuries sustained in an automobile accident in Winston-Salem, N. C., December 29, 1929.

Dr. Whitaker was born in Surry County, North Carolina, November 18, 1873, was graduated in medicine from the University of Tennessee in 1903 and immediately located at Julian, N. C. His time was devoted wholly to the practice of medicine. He was a most successful physician and his charming personality won him a host of friends. He will be missed by his professional brothers and all who knew him and his memory will remain in the hearts of many.

Dr. Whitaker is survived by his widow, Laura J. Whitaker, one daughter and two sons.

DR. H. B. YORK

Dr. H. B. York died at his home in Williamston, N. C., August 30, 1929. His death was momentarily expected after he was found on the floor of his office, unconscious on the night of August 18, 1929.

Dr. York was the youngest son of the late Jno. W. and Mary York and received his training in medicine in Baltimore, Md.

The evening session then adjourned, at 9:30 P.M.

DR. CYRUS LEE HUNTER, LEADING SCIENTIST OF WESTERN NORTH CAROLINA

MARY JOHNSTON AVERY

In the year of 1833 there came to Lincoln County of the Macpelah and Unity section, a youthful cavalier, Cyrus Lee Hunter, son of that daring Revolutionary soldier and scholarly divine, Reverend Humphrey Hunter of South West Lincoln, now Gaston County.

The son was possibly riding into the section as companion to his father as he visited the members of his flock, and preached at Unity Church. Cyrus Lee Hunter had just graduated in medicine, but being a musician as well as a physician, he was possibly traveling as choir leader, for some Lincoln County folk still remember the tall, lithe young fellow rise from the choir bench that still remains near the organ, and with a large tuning fork "raise the tune."

This was likely why Dr. Hunter first came to East Lincoln, but why he remained is another story.

On one of these visits he was invited to a singing school, which appears to have been a social function of the day, and not to be confused in any way with a real school of musical instruction. Here he met the beautiful young daughter of Gen. Peter Forney, Sophia, and from then on Reverend Humphrey Hunter was always accompanied by his son to East Lincoln on his ministerial visits, and the tuning fork was often laid down for the guitar, and a hymn gave way to a love song.

"You are a fine lad, Cyrus, but with a head so full of science I fear you will neglect the material things for your family, so I give you and Sophia a grist mill, that you may always have a means at hand of a livelihood." The speaker was, of course, Gen. Forney at the marriage of Cyrus L. Hunter and his youngest daughter, Sophia, in 1834, the one "who longed for her father to bring her a new bonnet from Charleston."

From the time of his marriage to Sophia Forney, Dr. Hunter became one of the big personalities of Lincoln County—a county made famous by many great personalities. He built his home, Vine Hill, near the plantation of Dr. R. H. Morrison, began his practice of medicine in the community, and was never known to send a bill, laid out for himself a life of research, and has contributed to North Carolina rich earnings in several branches of science.

To many, even the man himself has been forgotten, and to those who do remember his scholarly attainments, think of him merely as a historian, and "Sketches of Western North Carolina" as the only historical contribution to his credit. This seems to be the one living evidence left of his resourceful intellect, but as a matter of fact, it was only the last of his many gifts to his State. "Sketches of Eastern North Carolina" was interrupted by his sudden death in 1880 and it was so nearly complete that it would have been edited but was lost when Vine Hill was burned.

Dr. Hunter was a student all his life, by inheritance as well as environment, for his father, Reverend Humphrey Hunter, entering the Revolutionary War as a lad was pursuing knowledge alternately with

war. Each time he laid down the sword, from 1775 until freedom's cause was established, he picked up his studies, finally graduating in Theology in 1787. In 1789 he had also graduated in medicine. It was during these breathing spells between expeditions against Indian or Britisher, that Humphrey Hunter in 1776 began his "classical education at Clio's Nursery," in Rowan county. In his class was Andrew Jackson.

With this background the tall, quiet and scholarly son married Sophia Forney, built their home near the mill, and started life in earnest.

Mr. Brevard Nixon, of Charlotte, recalls as a lad, when visiting his grandmother, a cousin of Mrs. Hunter, taking corn and wheat to this mill, about a mile and a half down the creek. He liked the old-time "toad on a tussick," and on a big gentle horse riding alone to take grist to the mill and wading the creek, the longer he had to wait the better he liked it. This was the neighborhood mill, before the Civil War. Years later Capt. J. H. Sharp, son-in-law of Dr. Hunter, put in improved machinery, but in 1885 in opening the channel of the creek it was torn away.

Mr. Nixon also recalls another interesting incident in the life of Dr. Hunter. "Many time I went with my grandmother, who was a widow and very provident, to Dr. Hunter to deposit her money with him; he would loan it and pay her interest. Dr. Hunter was a kind of banker for the community, and if people had a little money they wanted to bear interest they brought it to him, and no one ever lost a cent by him, either," added Mr. Nixon. A real trait of the business man that his father-in-law evidently never suspected, but which must have been bequeathed him by that widowed grandmother who sailed for America from Ireland in 1750 "that the conditions of her son, Humphrey, aged 5, might be bettered." And though her grandson became the safety vault for the material surplus of his neighborhood, he also attended to their physical well being. Dr. Hunter, Dr. Sidney Johnston and Dr. William McLean were the physicians of this countryside then, and up and down the Catawba, even crossing into Mecklenburg, and neighboring counties, they rode tirelessly wherever called.

Sophia Forney Hunter only lived about 11 years after her marriage, survived by her husband and three children—two boys and a girl. So grieved over the loss of his wife, Dr. Hunter became more and more the student and researcher, and lived more and more within himself and among the books of his wonderful library.

Vine Hill was a white painted frame house with four big rooms below and four above, and the slave quarters in two rows surrounded the "big house."

The most important thing about the home was the library, and through three generations this has been the subject of speculation. Small children when they went in and beheld so many books wondered how long it had taken the tall, silent man to read them all. Grown-ups admired and envied this biggest of all libraries of the county, for East Lincoln was the home of books, of literature, of reading, of leanring and culture and every home was proud of its book collection.

As Dr. Hunter went from place to place on his medical missions he

became interested in living and growing things, and was soon widely known as a botanist of note, possibly of international fame particularly, for he had a splendid collection of woods. His specimens were all highly polished on one side, with the bark on the other. His grandson, Henry T. Sharp, of Asheville, thinks there must have been over 200 varieties of North Carolina woods in Dr. Hunter's collection. This wood collection was sent to the exposition at Venice, in 1775, where it was lost, though Dr. Hunter tried in every way to recover it.

Mr. Sharp also recalls a few years ago when visiting the Botanical Gardens of New York coming upon two rare specimens of plants discovered by his grandfather.

It has always been told in the family that Dr. Hunter brought from abroad a Tokay grape vine and grafted it on a native North Carolina grape, naming the new variety the Catawba. This is believed to be the origin of this famous grape, though we do not state it positively.

Then Dr. Hunter devoted much time to the study of bugs, insects and reptiles. Row after row of jars stood on shelves filled with queer bugs and snakes, even two-headed ones, in alcohol. It was a never-ending source of amusement to his own and other boys of the community. And still his thirst of knowledge and research continued. He next turned his attention to minerals and mining. Dr. Hunter's mineral collection was large, and unusual enough to claim a place of great importance at the Philadelphia Centennial in 1876.

Much placer gold mining was done in Lincoln, and Dr. Hunter had the wedding rings of his daughter, Sophia, and his son Lee's wife, made from the gold found on his place.

Dr. Hunter was a close friend of Agassiz, Audobon and the other leading men of science of this country, as well as abroad. His very unusual correspondence went the way of the library.

Today all that reminds one of Dr. Hunter and Vine Hill and its past is a splendid old slave, Frank Hunter, who still lives at his cabin on the Hunter place, having bought 115 acres. He is 87 and works every day, plows, hoes, and whatever there is to do.

This spring Mr. Nixon brought Frank to Charlotte to the Confederate reunion, and the old man remembered how he went to war with Capt. Willie Hunter, son of Dr. Hunter, who was killed at Chancellorsville. Uncle Frank originally belonged to Miss Sophia, and his brother to Marse Willie, but Marse Willie wanted him to go to war with him, and so he swapped his brother to Miss Sophia and 10 cents to boot. The splendid old slave recalled how Robert D. Johnston, afterwards General, and Willie Hunter, drew straws to see who would be captain, "and how Morse Robert Johnston won," and the old man said it with a sigh.

A few years before the war Dr. Hunter married Miss Catherine Lyman, of Massachusetts, and their only child, Lee Hunter, was just a lad during the war.

The daughter of Sophia must have had a bit of her father's sentiment. Though she was not won by a tuning fork, a worn pair of boots of a youthful officer played its part in her romance. In the last years of the War Between the States when the Confederate horses were

dying of hunger and exhaustion, a detachment of Gen. Alexander's Division from Virginia was sent to North Carolina for the impressing of horses. Where a man had several horses one was gladly given. The detachment reached Lincoln county, and one can fancy they stopped at Dr. Morrison's home to pay their respects to Mrs. Stonewall Jackson, the widow of their great leader, who lived with her father. Some of the detachment spent the night at Vine Hill and Miss Sophia noticed that one particular officer's boots were out at the toes.

She looked at her brother's brand new boots. She noticed his foot was large for a lad, and the officers foot was small. After the men were asleep she persuaded her young brother to slip into the room and exchange the worn boots of one Capt. John Sharp for his new ones. The Captain was duly embarrassed next morning, but he carried away with him more than an exchange of shoes! Immediately after the war was over the gallant Captain returned to marry Sophia Hunter. And the home that usually wore a sad countenance was, for a little while, filled with joy and laughter.

Dr. Hunter lived at Vine Hill until his death in 1880, dying suddenly when returning from church service at Castania.

Here he welcomed his son Lee and his wife Miss Pickett Myers, a few years before his passing. And he often paused in his historical sketches to set a broken arm, or tie a stumped toe for the grandchildren, eight in number, of his daughter Sophia. His grandson, Myers Hunter, son of Lee, who like his grandfather is a physician, lives in Charlotte.

It is difficult to bring to the front all the achievements of a man of such mental attainment, but one thing is certain, we will not agree with some of his own generation "that Lee Hunter was lazy."

The ordinary man saw no worth in the pursuit of plants, trees, bugs and insects. That to him was plain waste of time. It remains for us of this generation who view his work at a distance to give him praise, and to be grateful for the endeavors of Cyrus Lee Hunter. As in his own dedication of Sketches of Western North Carolina, "We who still cherish a lasting veneration for the memories of our heroic forefathers," do pay homage to this great and scholarly man of Lincoln county, who stands high among North Carolina's great sons!

A TRIBUTE TO THE SERVICE RENDERED BY THE SURGEONS OF THE CONFEDERATE ARMY

Ella Reed Matthews, Asheville

"Is there no balm in Gilead? Is there no physician there? Lord, why hast Thou forsaken me?" These words must have burst forth from the agonized lips of the wounded and dying in the Confederate Army many, many times as they lay for hours neath a pitiless sun, or perhaps all night under the cold stars, or within ghastly hospital walls with no help nigh. But there was a balm—the black depths of their anguish must have been pierced at times with the comfort of the thought of a life given in a Glorified Cause—for Home and Country! And there was a Physician—the Great Physician, the sympathizing Jesus Himself, was near. He heard and heeded their sufferings, and, bending over

them, the pitying angels wept. They were not forsaken! Earthly physicians worked with superhuman energy, straining every effort and using every resource at their command in their one desire to aid them. Willing hands were stretched out to them from every corner of the Southland, but alas, they were so often empty, useless hands—nothing to help with—no way to help.

When the War Between the States began, the Confederate Army was without an adequate supply of surgeons, medicines, surgical instruments, hospitals or equipments. And it was only when the first battle of Manassas was fought on July 21, 1861, that a full realization of the magnitude of the stupendous task confronting the Medical Department of the Confederacy was brought home to the Confederate Government. For after the bloody battle there, the road from Manassas Junction to Richmond was one vast hospital filled with the hundreds of sick and wounded from Beauregard's victorious army. Empty warehouses, tobacco factories, barns, cabins, homes, and anywhere that a blanket could be spread, was used for the wounded men. For two weeks they kept sending them in from the camps. There were so many of them that the health of Richmond was endangered. Those from the Federal Army had to be cared for in that vicinity, also. There were 1200 cases of fever among the Confederate troops stationed at Charlottesville. And with an insufficient number of surgeons, nurses and attendants, and medicine and materials for post operative treatments either short or lacking altogether, such a condition was bound to result in great embarrassment, great inefficiency and great suffering.

The Confederate Government took immediate steps to reorganize and enlarge its Medical Department. On July 30, 1861, President Jefferson Davis appointed Dr. Samuel Preston Moore, of Charleston, South Carolina, as Surgeon-General of the Confederate Army. Dr. Moore was a man of distinguished lineage, and a surgeon of note. Having resigned from the United States Army, in which he had served in the capacity of surgeon for twenty-six years, to enter the service of the Confederacy, he came to this work eminently well fitted and capable for this most responsible post, by reason of his former experience in the regular army.

He at once began to perfect the re-organization of his department, and to secure efficient and competent surgeons. Most of the troops on the field were volunteer troops, and they had been allowed to select their own officers, medical officers included. In this way a number of surgeons had been engaged in the service that were not competent. Many physicians all over the South had volunteered as privates in the ranks. Some of them were made officers in the ranks of their companies, and others were elected as surgeons. As many of these surgeons as were found to be competent were transferred to the Medical Department, and those not up to the standard were sent back to the lines. Certain laws applying to the medical personnel of the army were passed by the Confederate Provisional Congress, and medical examining boards were provided.

The Medical Department was composed of a Surgeon-General, 1000 surgeons, and 2000 assistant surgeons. In addition to these there were

a number of contract or assisting acting surgeons. There was a surgeon and assistant surgeon for every regiment of infantry and cavalry, and an assistant surgeon to every battalion. Both branches of the service—the army and the navy—were under the supervision of the Medical Department. Each State had a Surgeon-General who looked after the interests of his State troops, and coöperated with the general officers.

It was the duty of the surgeons to operate when necessary, and to have the wounded transported to the nearest hospital, and to look after the sick in camp or on the march. The duty of the assistant surgeon was to assist the head surgeons, and to give first aid on the battlefields, to the wounded, and to have them removed to the field hospitals.

Simultaneously with the selection and organization of the surgical forces, was the establishment of hospitals. At first any houses, barns, shelters made of rails, or anything available on or near the battle grounds, was used as a field hospital. Planks, or old doors were laid across supports for operating tables. In the towns or larger places, warehouses, churches, factory buildings and school houses were converted into temporary general hospitals. The men made the cots, and the women got together the blankets and quilts, or whatever they could obtain for coverings. Carpets were cut up to furnish covering for the men, and table cloths, sheets and curtains were contributed for surgical dressings. It is stated that in emergency cases on the fields, the doctors had been driven at times to use old soiled shirts or other soiled clothing to bind up wounds.

Using all the speed at their command, the Confederate Government through it Medical Department, established general hospitals (or base hospitals, as they were called in the World War), which were fully and carefully equipped for taking care of the sick and wounded of their army. They were established in large cities, and at points most accessible to the railroads and the armies. Some of the largest were established at Richmond, some at Memphis and Nashville, and others at Chattanooga and Atlanta.

When needed, additional hospitals were distributed around among the States according to their proximity to the fields of battle. The Chimborazo Hospital in Richmond, operated by the Confederate Government, was said to have been the largest hospital in the world at that time. It was conducted in a way unique: Its wards were divided into State wards. All from one State were placed in wards together, and surgeons and attendants were placed in charge of them from the same State, whenever it was possible to do so. The soldiers from each State accordingly were surrounded by folks from home, wherever practicable. The Chimborazo Hospital was in charge of Dr. James B. McCaw. The Winder Hospital was another large hospital stationed in Richmond. Its buildings covered 125 acres of ground, it is said. The Gordon Hospital was built in Nashville, Tennessee, and was a tremendous hospital. The Gordon, and several others of the large hospitals, were operated on an extensive scale, having their own bakeries, dairies, an ice house, and a garden run in connection with them.

Later, and in addition to the general hospitals, "Wayside Hospitals" sprang up at a number of the main junctions along the highways over

which soldiers, going to and fro, would be likely to travel. In these hospitals, soldiers taken suddenly ill, or convalescents going home on furloughs would be taken in and cared for. These Wayside Hospitals were originally the idea of Dr. T. P. Dargan, of South Carolina, who established the first one at Florence, South Carolina, and operated it at his own expense for a time, meeting with such success that others followed all over the South.

Private hospitals were conducted at the beginning of the war for a short while, mostly by devoted women anxious to serve, and these hospitals were attended by civilian doctors. But as the general hospitals became operative, these private hospitals were discontinued, with two or three exceptions, so that all could be under the supervision of the Medical Department of the Confederacy.

Medical Inspectors and Medical Directors were appointed by the Department, and a complete and comprehensive organization functioned easily and without a clash over quite a period of the war.

No work of the Medical Department of the Confederate Government was more imperative or difficult than the task of securing and keeping on hand an adequate supply of medicines and surgical supplies for the army surgeons and hospitals. The then humane Government of the United States, headed by "Abraham Lincoln," had declared medicine contraband. This was a move that caused the most extreme and indescribable suffering in the Confederate Army for the lack of chloroform, morphine, or any other anesthetic, at different times, for the wounded men. Limbs were often amputated, and terrible operations performed without an anesthetic of any kind, and there was no morphine or any other medicine of like nature to use as a follow up to give ease or surcease from pain. There was only cold water to use as a disinfectant.

It has been stated that the surgeons in the Confederate Army never amputated a limb without first having obtained the permission of the patient. And certainly, when life depended upon the amputation of a mangled, dangling leg or arm, or the removal of remnants of shell, shrapnel or minnie balls from the body, permission would be given. But however willing the spirit of the poor soldier might be, the flesh was weak, and such an operation performed without an anaesthetic of any description was unendurable agony, and often the patient had to be held by assistants. (This information is absolutely authoritative. My step grandfather, Robert F. Sales, a man of undisputed veracity—born, reared and died in Buncombe County—and a member of Company "K," 60th N. C. Regiment, was detailed in an Atlanta hospital, where he had been sent for treatment for a severe attack of inflamatory rheumatism, to assist in holding the patients at times for such operations as I have described. He stated that he was one of the few men who could assist in a case like that without falling in a dead faint from witnessing such a scene. I have also heard two different doctors, who were surgeons in the Confederate Army, make the same statement. Of course, Mr. Sales was convalescent when he was detailed for this service.)

But the success of the devoted doctors was wonderful, though the

death rate was high. However, it would seem that the screams, cries and sufferings of these hapless and helpless wounded men would echo in the ears of those responsible for such a measure even unto this day—that not even the tomb could shut them out.

There was also a great lack of medicine among the private citizens of the South at that time—old men, women and children—as well as among the Southern soldiers. This lack was supplied as far as possible by blockade runners, capture, and a few laboratories and distilleries of medicine at different points in the South, which were necessarily very limited in their output. The blockade runners of the Confederate Navy were of inestimable value in their service in this respect, bringing in the imported medicines on almost every ship. The Confederate Government established an agency in London whereby they were to forward medicine on each blockade runner, and the vessel was to carry cotton on the return trip to pay for it. After the fall of New Orleans, the fishermen slipped it in and out of there in their canoes, and at Charleston and Wilmington, the women assisted in slipping the medicine in from the blockade runners and sending it through the lines to where it was needed most. Another source of obtaining medical supplies was by capture from the enemy. On one occasion more than $150,000 worth was captured from a Federal wagon train. And while most of the surgical instruments were either imported or captured, there were a few skilled workers in metals in the South who were able to supply them to a limited extent, these being in North Carolina and Virginia.

Dr. Moore organized the "Association of Army & Navy Surgeons of the Confederate States." Books were written and published for the instruction and assistance of the medical men by eminent surgical scholars detailed for this purpose by the Department, and for more than a year—1864-1865—a medical journal, "The Confederate States Medical & Surgical Journal," was published.

Owing to the scarcity of medicines, substitutes were in demand, and Dr. Francis Peyre Porcher, of South Carolina, one of the leading botanists of the day, as well as an eminent surgeon, was detailed to write a medical botany of the Southern States. This was designed to distribute a knowledge of those shrubs, plants and barks to be obtained in the South which could be used for medicine. This very valuable contribution was distributed during the war in pamphlet form, and in 1869 was issued in book form.

Dr. Hunter Holmes McGuire, of Richmond, who was surgeon on Stonewall Jackson's staff—and who was beloved by the General and with him when he died—humanized war (this from Boston), by originating the custom of immediately releasing all medical officers and men when captured, and thus allowing them to return at once to their command. But the Federal officers in authority violated this mutual understanding between the armies, when at Gettysburg, contrary to the rules of civilized warfare ,they arrested and imprisoned the surgeons and attendants left behind to minister to the mangled remains of the Confederate troops at that time—a dark blot on the pages of American history.

And to Surgeon McGuire belongs the credit of organizing the Re-

serve Medical Corps of the Confederate Army, and of perfecting the Ambulance Corps. For there was a time during the War Between the States that the wounded soldiers of the Southern Army were carried from the battlefields in comfortable ambulances, equipped with cushions and springs, but at the first of the war, and also at the last, it was rough, jolting wagons, or any means of conveyance possible. The ambulances had worn out due to the long drives from one battlefield to another, and could not be replaced.

It will be seen from the above that no known means available were omitted or neglected by the medical men in their efforts to make the Medical Department of the Confederate States a most efficient and effectual instrument of relief for the soldiers of their army.

The Medical Department of the Confederate Army was well equipped with educated and honorable men. The nucleus of this body of surgeons was formed by the twenty-seven surgeons that resigned from the regular Army of the United States to enter the service of the Confederacy. They were second to none in this or any other nation. Several of them had spent one or two years abroad in the pursuit of their studies in their profession, and others had received the best medical training in the leading schools of the United States. Among them were noted founders and instructors of medical schools in this country, notably Dr. Hunter Holmes McGuire, Stanford E. Challis, Frances Peyre Porcher, J. R. Buist, and David W. Yandell.

After the war, several of the members of the Confederate Surgical Staff received appointments to important foreign posts. Dr. Edward Warren of North Carolina, received an appointment in the Egyptian army, and Dr. John T. Darby was appointed a colonel on the medical staff of the Prussian army.

The surgeons and their assistants lived mostly with their men in the open fields in the trenches swept by the fire of the enemy, or in holes half filled with water. Living on the coarsest foods, often hungry, and frequently, when half sick themselves, performing services that called for skill and courage. At the siege of Petersburg, after one of the big battles there, there were five surgeons that worked almost continuously for three days and nights trying to care for the wounded, and all this time their hospital—the "South Carolina"—was being repeatedly struck by shells from the enemy.

Some of the surgeons died from exposure, as did Dr. William Hay and Dr. John Ramsey McDaw. Others went as prisoners rather than be separated from their men. And always it was the scenes of carnage and bloodshed for them—the harrowing and gruesome side.

North Carolina did her part, and more, in this work. She organized her medical staff early in 1861, with Dr. Charles E. Johnson as Surgeon-General, E. Burke Haywood, Surgeon in Charge of General Hospitals, and Peter E. Hines, Medical Director of Hospitals in North Carolina. General hospitals were established. The first one at Raleigh. The North Carolina Hospital at Petersburg was built and equipped. Also, a general hospital at Richmond.

During the time of Surgeon-General Johnson's administration, he visited every battlefield in Virginia, carrying medicines and supplies of

every kind to our soldiers. And it is said that North Carolina had better arrangements for the care and treatment of its men than any other Southern State. Upon the appointment of Dr. Johnson as Surgeon-General of the State, he had gone to work immediately selecting and carefully recommending surgeons and assistant surgeons for each regiment as it was organized. Everything that could be done, was done in order to give the North Carolina troops the best medical supplies that could be obtained. Druggists in North Carolina gave every assistance in the efforts to provide enough medicine for the troops, and some of them sold almost their whole supply to the State.

In September, 1862, Surgeon-General Johnson resigned, and Governor Vance then appointed Dr. Edward Warren, of Tyrrell County, Surgeon-General of North Carolina. Supported by Governor Vance, Dr. Warren established Wayside Hospitals at convenient places in the State, and a Soldier's Home in Richmond. He obtained a good supply of medicines and hospital stores and distributed them among the State troops where needed. A corps of competent surgeons was organized, among them Dr. Eugene Grissom and David Tayloe, and they were sent wherever their services were in demand. The Medical Department of North Carolina was felt, appreciated and respected not only by people of the State, but by the entire Confederacy.

In 1862, when Zebulon B. Vance was elected Governor, one of his first acts was to send a man to England to purchase a steamship which was to be used in importing supplies for his State troops. This, the first one, was named the "AdVance" in his honor, and he added several more to this list, and they became blockade runners as the times necessitated. This small fleet rendered invaluable services to the Confederacy as well as North Carolina. From time to time, they brought over medicine valued at $50,000 which was distributed for use in this State and among the Confederate troops elsewhere. Medical supplies were also imported by them, England being mostly the source of supply.

From first to last, among the general hospitals throughout the State, were two at Raleigh, two at Wilmington, one at Wilson, one at Goldsboro, one at Wake Forest, one at Charlotte, one at Statesville, and in 1865, one was completed in Salisbury. There was also a Prison Hospital in Salisbury.

Among the wayside hospitals established in the State, were those at Tarboro, Weldon, Goldsboro, Salisbury, Charlotte and other points. And with North Carolina's general hospital at Petersburg, and one in Richmond, built early in 1862 for a hospital, home and supply store for North Carolina soldiers, there was no stone left unturned by the State and Medical Department officials in their efforts to take proper care of their sick and wounded soldiers on the field.

When Surgeon Chopin, Medical Inspector on Beauregard's staff, made a round of the North Carolina hospitals rather late in the war, he reported to Surgeon-General Samuel Preston Moore, that he had found the hospitals in the North Carolina District better conducted, neater and cleaner than those in any other district in the Confederacy, and that he had inspected them all.

Surgeon-General Moore was always kind and liberal to all the hos-

pitals in North Carolina. In 1862, by request of the Confederate Government, all the hospitals, furniture and equipments in the possession of the State of North Carolina were turned over to the Confederate Government, so that all could be under one medical head.

According to Clarke's *Regimental Histories of North Carolina,* the State had 80 Regiments, 6 Battalions, and 5 Brigades in the field. Each regiment had a surgeon and assistant surgeon, and the battalions and brigades likewise. These appointments were constantly changing, and from the beginning of the war to its final chapter, there was an army of medical men enlisted in the service of the State and the Confederacy in general. They were well fitted for their great calling, and they rank with those who best served the South in her trial and suffering. And they were ably seconded in all their efforts by Governor Zebulon B. Vance, whose ability and far sightedness placed him in the lead of all the war governors in the South.

At the close of the war, Surgeon-General Edward Warren, who had been honored by Governor Vance with the rank of Brigadier-General, received an appointment on the medical staff of the Khedive of Egypt, with the title of Colonel in the Egyptian Army. He was assigned to duty as the chief surgeon of the general staff. Later, he served the French Government, and received the Cross of the Legion of Honor in appreciation of his services in their army.

The Medical Department of the Army and Navy of the Confederacy cared for more than 600,000 troops of their own, and 70,000 Federal prisoners during the war. The number receiving medical attention was much larger than normally would have been the case, because of the stern policy of the Federal Government late in the war of refusing to allow the exchange of prisoners. This policy resulted in the crowding in at one time of 30,000 prisoners at Andersonville, where there was only space designed for 10,000, and it resulted in a distressing death rate in the Confederate prisons. But even then, the death rate in the Federal prisoners was higher, it being twelve per cent and that of the Confederate prisons was only eight and one-third per cent. The Confederate surgeons and their assistants strove manfully to reduce the death rate. It is said that the Confederate surgical staff cared for more than three million cases of wounds and disease during the war.

When Richmond fell into the hands of the Federal troops on April 2, 1865, that city was swept by fire, and among the buildings that were burned was the office of the Surgeon-General of the Confederate Army, Dr. Samuel Preston Moore. This office contained the records and data of the detailed activities of the Medical Department of the Army and Navy of the Confederate Government for the whole four years of the war. This was a grave and serious loss, as much of it could never be replaced. And this accounts for the fact that the Medical Department has never received the full credit and glory that it earned. It was not theirs to make the spectacular and brilliant military sallies of their brothers on the field, but to render the unspeakably grand and self-effacing service of saving their lives and alleviating the pain of their fellow soldiers within the obscurity of hospital walls, or behind the lines.

The actual rewards received by them were meagre and inadequate

when compared to their military associates on the field, but their duties were of a high and exalted order, and their real rewards were the approval of their immediate commanders, the confidence of the sick and wounded, and the support of their own conscience. The Confederate surgeons, in common with the Confederate soldiers, did not enter the service of the Confederacy with the hope of material rewards, but in obedience to a sacred principle.

And when the coming historians of the South and the War Between the States shall have collected and faithfully chronicled what is left of the story of these non-combatant heroes, it will be found that their services, sacrifices and triumphs will make one of the proudest pages in American history.

(The information below was obtained from Dr. Gaillard S. Tennent's "Medicine in Buncombe County Down to 1885; Historical and Biographical Sketches." Also from Clarke's Regimental History of North Carolina.)

SURGEONS FROM BUNCOMBE COUNTY, NORTH CAROLINA, WHO SERVED IN THE WAR BETWEEN THE STATES, 1861-1865

During the four years of the War Between the States, Dr. J. F. E. Hardy was the only physician from either Asheville or Buncombe County who practiced uninterruptedly in and around Asheville during all that period. All the others were in some way, or at some time, connected with the Army. Dr. Hardy was barred from active service on the field because of his age. But he sent three sons to the front, and one, Lieutenant William Henry Hardy, fell at the battle of first Manassas. Those serving were:

Dr. William Lewis Hilliard—Surgeon of the 9th N. C. Cavalry. Chief Surgeon. President of the Examining Board which met in Knoxville. Detailed to establish hospitals preparatory to the battle of Chickamauga.

Dr. James Mitchell Stevens—Captain in the ranks. Followed by the appointment of surgeon of the 60th N. C. Regiment.

Dr. Robert M. Cooper—Assistant surgeon in the 60th N. C. Regiment and officer in the ranks.

Dr. Morgan L. Neilson—Surgeon of the 14th N. C. Regiment throughout the whole four years of the war.

Dr. J. G. Hardy—Assistant surgeon in the Bethel Regiment, and also the 6th N. C. Regiment and surgeon of the 64th N. C. Regiment.

Dr. John Daniel Reynolds—Surgeon in the 29th N. C. Regiment throughout the war.

Dr. George H. Thrash—Surgeon in the Militia during the war.

Dr. Daniel F. Summey—Served during the war in the Quartermaster Department under Col. Stephen D. Lee.

Dr. Joseph McDowell—Not on the Medical staff of the Army. He rose to the rank of colonel in active military service in the field.

Dr. J. S. T. Baird—On the Conscription Medical Examining Board.

Dr. David M. Gudger—Private and Corporal in "Zeb Vance's Company," in the 14th N. C. Regiment. Studied medicine after the war closed.

Dr. John Yancey—Com. Oct. 29, 1861 (Clarke's Regimental History).

Dr. David T. Millard—Sent here from Eastern North Carolina for service on the Conscription Examining Board. Dr. Millard never engaged in the active practice of medicine here, although he was a resident of Asheville for a long

number of years, and died here. Dr. Millard served on this Medical Conscription Examining Board with Dr. J. S. T. Baird.

This section also had a Wayside Hospital. It is not generally known that Old Calvary Church at Fletcher, N. C., and only a few miles from Asheville, was used as a Wayside Hospital. It was also used as barracks at times between 1861-1865. Dr. Preston Lane, of Hendersonville, relates an amusing incident of the capture and confinement of a Yankee soldier there, who escaped the first night. The old Asheville Female College (dormitory), corner of Oak and Woodfin streets, Asheville, was used as a hospital for sick soldiers. I do not know for how long, nor the exact time when it was used.

BIBLIOGRAPHY

Sources of Material obtained for the essay on "The Service Rendered by the Surgeons of the Confederate Army."

1—Clarke's Regimental History of North Carolina.

2—Copies of the Confederate Veteran of November and December, 1925; April, May, June and July, 1926; February, April, June and October, 1927; May, 1928.

The prize for the best essay on "The Service Rendered by the Surgeons of the Confederate Army" was offered through the North Carolina Division of the United Daughters of the Confederacy by Mrs. Henry W. Wharton, of Greensboro, in honor of her father, Dr. James Thomas Graves, a Confederate surgeon of Wilson, N. C. Mrs. Wharton is a sister of Mrs. J. J. Yates, of Asheville.

Mrs. A. Matthews of the Asheville Chapter, U. D. C., won the prize offered by Mrs. Wharton, with the essay appearing above.

THIRD GENERAL SESSION

WEDNESDAY, APRIL 30, 1930, 9:30 A.M.

Ball Room, The Carolina Hotel, Pinehurst

Dr. C. M. Van Poole, Chairman.

Chairman: Gentlemen, the first paper on the program, is "The Consideration of an Anemia of Pregnancy and the Puerperium," by Dr. W. Bernard Kinlaw, of Rocky Mount.

CLINICAL CONSIDERATION OF AN ANEMIA OF PREGNANCY AND THE PUERPERIUM

C. T. Smith, M.D., F.A.C.P., and W. B. Kinlaw, M.D., F.A.C.P.,
Medical Service Park View Hospital, Rocky Mount, N. C.

Puerperal anemia, which is probably a continuation if not a progression of the anemia of pregnancy, was first described by Channing in 1842, (1) and for many decades doubted as being a specific anemia, has received more study in the past two decades and has been estab-

lished as a definite anemia related to pregnancy and the puerperium; and furthermore, according to Murdock's (2) observations, "if the patient survives the acute attack, the blood picture usually returns to normal."

For an anemia to merit such a classification, we contend that all anemias should be excluded which might be explained by hemorrhage, sepsis (including infections), nephritis, syphilis, previously present hemolytic icterus, or primary pernicious anemia, leukaemia, acute or chronic, myelocytic, or lymphocytic; in other words, all possible causes except the pregnancy itself. We also wish to exclude the so-called toxaemia of pregnancy as it is generally known, unless the anemia we are discussing is a manifestation of a toxin produced by the pregnancy.

A most comprehensive clinical picture of this anemia is given by Rowland: (3) "An insidious onset of anemia in the latter weeks of pregnancy, often not recognized till in the puerperium, usually antepartum symptoms of weakness, breathlessness on exertion, palpitation, headaches, dizziness, edema of the feet, and occasionally an *associated* (italics ours) definite toxaemia of pregnancy with albuminuria and hypertension. Labor may come on prematurely, is characteristically short, and relatively painless. Still-birth may occur, but a living child does not share in the anemia and develops normally. Labor aggravates the anemia, and the patient may go into collapse at once if the anemia is marked. Typically there is a rapid progression in the anemia for the first week or two. Or, it may be slow, requiring two months before recognition. Hematologically primary and hematologically secondary."

Esch (4) insists "the secondary type never goes into the primary type, and that however closely the picture may resemble pernicious anemia, no authentic case or recurrence independent of pregnancy has yet been reported." Such views are in accord with our finding, as a later analysis will show.

In considering the differential diagnosis, the relationship of this anemia to pernicious anemia is often very close. Achlorhydria may be present with diarrhea, sore tongue, parasthesia in the extremities, and a blood picture closely resembling primary anemia. The very fact that liver extract is helpful in selected cases argues a closer kinship than could have been claimed before. Pepper (5) admits, "unquestionably the evidence favors the view that the anemia is a hemolytic anemia, but no evidence to permit us to designate the hemolytic factor at work." If we accept the theory that pernicious anemia is a deficiency disease, which deficiency is supplied by liver extract, might not certain of the anemias of pregnancy and the puerperium be due to the same but temporary deficiency? We say temporary, because it is generally admitted that when the patient is tided over the acute attack, she will probably remain well—succeeding pregnancies may or may not provoke another attack.

If the anemia of pregnancy is not a toxaemia of pregnancy, the resemblance is so close that some of our patients have been sent in as a toxaemia for induction of premature labor or Cesarean section. The symptoms of toxaemia are the albuminuria, anemia, increased pulse rate, edema, and sometimes hypertension. All of these findings may be pres-

ent in the anemia of pregnancy. The actual diagnosis may be not be made until after the pregnancy has been terminated and the patient fails to make the expected recovery. If the anemia of pregnancy is kept in mind and the condition of the patient justifies the delay, the treatment of the anemia may be instituted and the patient probably carried to term.

The presence of fever, frequently alarmingly pronounced, gives the obstetrician much concern, fearing puerperal sepsis. If the case is seen and a diagnosis made before labor, the rise of fever can be prognosticated, and this gives the obstetrician and patient much comfort when there is a persistent elevation of fever after delivery. The ultimate exclusion of sepsis will not be made by the negative blood culture, which frequently leaves one in doubt, but by the rapid fall in temperature and leucocytosis, if present, as the anemia improves under treatment. The absence of leucocytosis does not necessarily eliminate sepsis as a diagnosis, because Cabot (6) and Osler have shown by four autopsy cases that a severe sepsis may be present without inducing any leucocytosis. The excessive amount of albumin in the urine would lead the unwary to make a diagnosis of uncomplicated nephritis. We feel sure that we have made that mistake more than once, with attention and treatment focused entirely on the nephritis, when if the anemia had been treated, the albuminuria would have cleared up.

We have nothing to offer distinctive regarding this albuminuria, but suggest that a study of the anemia will most likely indicate the condition requiring the treatment, and the therapeutic response will verify the diagnosis.

If the case is first seen after the anemia has been present for some time, or was slow appearing, the fever and pronounced cardiac murmur, usually systolic in time, suggest endocarditis. Here again, the response to the treatment of the anemia will establish the diagnosis.

The treatment will depend on the individual case, and if the proper treatment is selected and adhered to, the response is most gratifying. The anemia might be severe and the patient so ill, that immediate transfusion is indicated. This might suffice, but it is well to follow up with either liver extract and hydrochloric acid, if achlorhydria is present, or massive doses of iron. We have tried to demonstrate with cases all too few, that the patient without hydrochloric acid in stomach contents, or with low acidity, will respond better to liver extract and the patient with normal or high acidity, will not respond to liver extract, but to massive doses of iron. In our earlier cases, we transfused, then gave dilute hydrochloric acid, iron, arsenic, and later when the value of liver extract in pernicious anemia was demonstrated, we used it in the treatment of puerperal anemia.

In the analysis of our twenty-two cases, eight of which were reported in 1925 (7), we find it almost impossible to classify them as primary and secondary types. Seven showed involvement of the gastro-intestinal, the hematopoietic, and nervous system (accepting the history of parasthesia as an involvement), two of the gastro-intestinal and hematopoietic. These nine we classified as of the primary type. The remaining thirteen showed such bizzare pictures as to defy classifi-

cation, save that they were undoubtedly related to the pregnancy and puerperium. Of the nine cases in which gastric analyses were done, five showed no free hydrochloric acid, and in four the hydrochloric acid was below normal.

The blood Wassermann (Kolmer) was negative in eighteen cases, in four it was not done. These patients showed no clinical evidence of syphilis, so with the negative Wassermann reactions, we feel that we have contradictory evidence to syphilis playing any part in these cases.

In this particular section of North Carolina, hook-worm has been very prevalent. This required the exclusion of uncinariasis as a contributing factor in the anemia. In eleven cases in which the stools were studied for ova, they were found in only one, and when that patient returned with a recurrence, the ova were not present.

Fever was present in all the series of twenty-two cases. In nineteen the temperature was 100 degrees F., or over. In one 104 and another 105. The urine of eighteen showed albumin estimated as varying from i to iii on a scale of iv.

In twenty-one cases the red cell counts were below three million, in sixteen of these below two million, and in four of these below one million. The color index was greater than one in thirteen cases. In sixteen the smears showed definite anisocytosis and poikilocytosis. Nucleated reds were found only once and then there were 263 to each 100 white cells counted. This case, however, was classified as the secondary type and made no response to liver extract, but responded rapidly to 100 grains of iron daily. The white cell count was below 8,000 in fifteen, and ranged between 8,000 and 20,000 in the others.

Five of the cases gave histories of recurrence, two more were treated for the initial attacks and later the recurrence in the hospital. In each instance the recurrence occurred with pregnancy. The youngest gave the age of 16, and the oldest 38, average for the twenty-two, 26 years. The absence of recurrence except with the pregnancy, and the youth of the patients, are distinctly against the findings in pernicious, or true Addisonian anemia.

Thirteen received transfusion. Of these two died. One of these was extremely ill on admission, and died thirty hours after transfusion with acute dilatation of the heart. The second of the transfused series to die, did not follow up treatment. The third case to die, was not transfused for lack of a suitable donor, left the hospital and refused treatment. Six made a complete recovery on liver extract alone. One did not improve on liver, but made rapid progress on 100 grains of Blaud's mass daily.

The following case is presented as typical of the anemia, with the added features of being severe, not responding to transfusion, but to liver extract.

Mrs. J. A. S., Hosp. No. 15,439, age 33, para V, admitted to the hospital January 4th, 1928, with the complaints of weakness, dyspnea, dizziness and headaches.

She had noticed these symptoms for a month and a half before her baby was born. On admission, her baby was 10 days old, and her former complaints had been aggravated since its birth.

She had had high blood pressure and severe nephritis with her fourth baby. She had had three miscarriages, and one baby died at the age of two years. As a child she had had "rheumatism" and typhoid fever, but no other illnesses save child-birth.

On examination she appeared well nourished, but very anemic. Her eye-grounds showed recent retinal hemorrhage. There were no cardiac murmurs, no cardiac enlargement. Her blood pressure was 130-90, pulse 100, temperature 102. The liver and spleen were both palpable. The tendon reflexes were normal, no Babinski. The uterus showed moderate subinvolution, with slight stellate tears of the cervix.

Laboratory findings: Urine; albumin ii on a scale of iv, many hyalin, granular, and cell casts. Blood: hb. 20%, red cell count 1,060,000, while cell count 16,400, polymorphonuclears 86%, lymphocytes 11%, transitionals 2%, eosinophiles 1%. The platelets were estimated as plentiful. There was marked difference in size and shape of the red cells, marked achromia, no malaria, marked stippling and polychromatophilia. The icterus index was 20, Van den Bergh direct reaction, hemolysis of the red cells began at 0.4 and ended at 0.275. The blood urea was 32 mg., blood Wasserman negative. The feces showed no hook-worm ova, the gastric contents showed no free hydrochloric acid.

On January 6th, she was transfused with 500 c. c. of citrated blood with no reaction. On January 12th, the day she left the hospital, her red cell count was 1,980,000, hb. 40%, white cell count 9,400, polymorphonuclears 78%, lymphocytes 6%, large mononuclears 14%, transitionals 1%, eosinophiles 1%. Anisocytosis and poikilocytosis marked.

She was given dilute hydrochloric acid and liver feedings which she refused. Soon after leaving the hospital, she lost the gain she had made. Her vision became very much impaired and she developed a generalized edema. It was felt that she had not received sufficient benefit from the transfusion to repeat it. She was then put on liver extract which she tolerated better than the liver feeding. Improvement on this was very rapid. The vision improved, but never returned to normal. On April 3rd, 1930, her red cell count was 4,210,000 hb. 80%, smear showed normal red cells.

A second case of interest is case No. 14 in our series. Mrs. A. T. G., who was treated twice for the same condition. Was age 22 when first seen in July, 1926, at which time she complained of weakness. She was pregnant and nearly at term. General physical examination was practically negative except for the apparent marked anemia. She had 1,050,000 red cells and hb. 25%, blood Wasserman negative. Her stools contained hook-worm ova. Her temperature was 102, white count 5,000 with a normal differential (no increase in eosinophiles), urine contained albumin ii on a scale of iv. She was transfused with 500 c. c. of citrated blood and given two treatments for her hook-worm, and put on dram dose of dilute hydrochloric acid. She went to term and delivered a normal baby that is still living. She then got all right at home until two months before her second admission in August, 1928. She was delivered of her fifth baby two months before admission, and although she lost very little blood, she had continued to get weak and pale. She was sent to us again for transfusion. This time her skin had a

slightly yellowish appearance (icterus index 22) but her general physical examination was essentially negative. She was nursing her baby. Her red cell count this time was 1,350,000, with hb. 30%, and blood volume index 1.19. There was definite change in size and shape of the red cells. Her Wassermann was negative again and the stools repeatedly negative. Her hydrochloric acid was 12. The urine showed an albumin i on a scale of iv. Her blood urea was 40 mg. per 100 c. c. and kidney function 69% in two hours. Although she was fairly sick there was no emergency so we decided to try liver extract instead of transfusion. She was given one ampule of Lilly's Extract No. 343 after each meal. At the sixth day her red count was 2,160,000 and hb. 45%. Her appearance and feelings were much improved. On the 12th day her count was 2,460,000 and hb. 50%. The patient continued to improve at home and since then has had another baby, and her physician, Dr. Julian Brantley, of Spring Hope, N. C., stated recently that she was not anemic and had no trouble with her last pregnancy.

While we find that many of these cases resemble pernicious anemia very closely, there are many that do not, and yet the anemia is definitely associated with pregnancy and the puerperium. We are not able to agree with Alder (8) who states flatly "that in the history of almost every instance of the pernicious type of the anemia of pregnancy there occurs a reference to some previous chlorosis, severe anemia, syphilis, or other infection. McSwiney (9) in analysing 43 cases of various types of anemia of pregnancy was impressed with the frequent association of syphilis with the anemia. Eighteen of our patients had negative Wassermanns (Kolmer), and the test was not made on the other four.

Aubertin (10) does not hesitate to call the condition pernicious anemia, and Brady (11) who collected 68 cases from various sources, and others, do not hesitate to term the condition "Pernicious anemia of pregnancy," however, we have not been able to find any case in the literature that meets the modern requirements for a diagnosis of typical Addisonian anemia. The etiology is obscure, and the disease is pernicious in most cases unless checked. However, one very important fact is that when recovery takes place it is permanent, with no remission and no recurrence unless at a subsequent pregnancy which does not necessarily follow, and therefore an attack successfully treated is not a contraindication to subsequent pregnancies.

We feel that the term "pernicious anemia" is loosely used; less obnoxious would probably be "A pernicious type of anemia," however, in the secondary type the patient may also have a fatal termination if not properly treated.

Unless puerperal anemia is kept in mind, the patient in almost every instance will be treated for some other complication. In our series, the red counts were so low, that the most obvious need of the patient was blood. Our early cases were all transfused provided a suitable donor could be found but in no instance did we rely on transfusion alone, although Allan (12) states that transfusion alone is curative. Knowing

Case No	Patient	Color	Hosp No.	Age	Para	Nursing	Baby	Chief Complaint	Duration	Diarrhea	Paresthesia	Sore Tongue	Chill	Jaundice	Possible etiology	Antepartum	Postpartum	Temp.	W.B.C.	Staffs	Polys	Wasserman	Ict. Index	R.B.C	Hb.	Poik.	Anis.	Nu. Reds.	Color Index	Hcl.	Albumin	Feces	TREATMENT Hcl.	Iron	Trans.	Liver	Result.	Recurrences
1.	M.B.	W	4215	22	2			weakness	5 wks	++++	0	0	0	sl	none	?	+	100.2	3,800	-	50			1,080,000	30%				1+		ṫ	neg	+	+	+	0	good	0
2	J.R.E	W	6456	34	3	+	L	weakness-diarrhea	3 mo.	++	+	+	+	0	none	0	+	100	2,000	-	31	—		1,300,000	40	+	+	0	1+	0	ṫ	neg	+	+	+	0	Improved: Died later pneumonia	2
3.	W.G.R	W	6636	25	2	+	L	diarrhea, pale	8 mo.	++++	0	+	0	0	none	sl	+	100	3,000	-	50			1,020,000	20	+	+	-	1+	0	ṫ		+	+	0	0	good	0
4.	R.G	W	7438	31	3	0	L	weakness, diarrhea	6 wks.	+++	+	0	0	sl	sore throat	?	+	100.2	13,800		78	—		1,750,000	30	+	+		1-		ṭṭṭ	neg	0	0	0	0	Died: Refused Treatment	2?
5.	J.S.	W	7517	22	2	+	L	unconscious, pale	6 wks.	++	0	0	0	0	sore throat	0	+	104	4,000		69			0,570,000	10				1-		ṭ-		+	+	+	0	Improved. Well now	1
6.	G.N.B	W	7612	26	2	0	L	weakness, dyspnea	3 wks.	0	0	0	0	0	none	0	+	100°	3,800		69	—		1,280,000	20	sl	sl		1-		ṭ		+	0	+	0	Improved. Well now	1
7.	E.W	W	1558(04)	18	1	+	L	weakness, nausea	8 wks.	0	0	0	0	0	none	0	+	101	5,800		79	—		0,970,000	15	+	+		1-				+	0	+	0	Improved: Stopped medicine later DIED	0
8	C.B	W	8348	18	1	+	L	weakness, diarrhea	2 mo.	+++	+	+	0	0	none	0	+	101	4,800		54	—		1,070,000	25	+	+	0	1+		ṭṭ	neg	+	+	0	0	Improved	0
9.	W.M.G	W	13,765	28	4	+	L	weakness, diarrhea	10 mo.	++++	+	0	0	+	none	0	+	100	3,400		70	—		1,240,000	35	sl	sl		1+		ṭ-	neg	+	+	+	0	Improved	0
9.	W.M.G	W	15,584	29	5	0	D	diarrhea	5 days	++++		0	0	0	none	+	0	103	8,800		41	—		2,910,000	60	0	0		1+		ṭ	neg	+	+	0	0	Improved	1
10.	J.L.M	W	13,915	23	1	0		diarrhea-weakness	3 mo	++++	+	0	0	0	teeth	0	+	102	7,800		83	—		0,890,000	20	+	+	+	1+		ṭ-	neg	+	+	+	0	Improved	0
11	J.N	W	14,138	16	1	0		weakness	3 wks	++	0	+	0	0	none	+	0	100	13,000		82	—		0.520,000	15	+	+		1+		ṭṭṭ		0	0	+	+	Improved (1 mo. later)	0
12	J.R.K	W	14,381	20	1	0	0	weakness, fever	3 days	++	0	0	0	0	none	+	+	105	1,600		24	—	10	1,100,000	25	sl.	sl		1+		ṭṭ		+	0	+	0	Improved	0
13.	M.W	W	14,601	36	7	0		weakness	1 wk	0	0	0	0	0	pyelitis?	0	+	100°	2,000			—		1,030,000							ṭ-		+	0	+	0	Died	0
14.	A.T.G	W	12,912	22	4	0	L	weakness	2 mo	0	0	0	0	0	worms	+	0	102	5000			—		1,050,000	25				1+		ṭṭ	+	+	0	+	0	Improved	?
	A.T.G	W	16,590	24	5	+	L	weakness	2 mo.	0	0	0	0	sl	none	0	+	99°	3,600	22	42	—	22	1,350,000	30	+	+		1+	12	T	neg	+	0	0	+	Improved rapidly. Live baby 6 mos later count. 4,130,000	1
15.	L.L.K	W	18,222	25	0	0		weakness	6 wks.	0	0	0	0	0	none	+	0	99°	11,200	22	60	—	10	3,110,000	60	0	0	0	1-	10			+	0	0	+	Improved	0
16.	B.J.	C	16,491	38	9	0	D	weakness	2 mo.	0	0	0	0	0	none	+	0	100	15,000	9	74	—		2,340,000	40	0	0	0	1-		ṭ-		0	0	+	0	Improved	0
17	J.A.S	W	15,439	33	4	+	L	weakness, dyspnea	2 mo	0	0	0	0	0	Teeth, ?	+	+	102	9,400	10	78	—	20	1,060,000	20	+	+	0	1-	0	ṭṭ	neg	+	0	+	+	Improved	
18	L.W.	C	16338	22	2			weakness	3 mo	0	+	0	?	0	none	0	+	99°	3,600	4	31	—	35	2,970,000	60	0	0	0	1+	14			0	+	0	0	unknown	0
19.	O.S	W	16,141	23	1	+	L	Fever	12 days	0		0	+	0	Retained secun.	0	+	104	5,800	22	72	—		1,840,000	20	+	+	0	1-		ṭ		0	0	0	+	Improved	0
20	H.R.R	W	18,104	35		0	L	weakness	1 mo.	++	0	+	0	0	none	+	0	99°	18,600	13	71	—	10	2,950,000	50	+	+	+	1-	0	ṭṭ	neg	+	0	0	+	Unsatisfactory discontinued treatment	0
21	A.G.S	W	19,308	26	2	+	L	weakness, fever	2 wks	0	+	0	0	0	none	0	+	103°	11,600	6	46			2,800,000	50	+	+	0	1-	0	0		+	0	0	+	Improved	0
22	A.B.I	C	19,481	26	2	0	D	Stupor, edema	2 wks	0	0	0	0	0	none	+	+	100	20,000	16	69	—	15	1,110,000	30	+	+	++	1+	18	ṭṭṭ		+	+	0	+	Improved: Liver - no results Iron - good results	0

that transfusion is not always available and following its failure in some instances to give the desired result (case 7 and 17 of this series) we have utilized liver extract in selected cases. As state above, transfusion may be a life saving measure, but we hope that with the early recognition of the disease that liver extract or iron may be used before the condition of the patient gets so serious as to require transfusion. We had six to make complete recovery on liver extract alone. In the literature liver extract had been used successfully by Brault (13), Larribere (14), Peterson (15) and others.

In conclusion we believe that there is an anemia of pregnancy and the puerperium that is a clinical definite entity. That in some instances it closely resembles pernicious anemia but not true Addisonian anemia. The indications for treatment are definite and the response is very satisfactory.

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CHAIRMAN: The next speaker, who has requested that he may appear at this time, is Dr. William Allan, of Charlotte, who will present "Is Hypertension Acquired or Inherited?" Docton Allan.

IS HYPERTENSION ACQUIRED OR INHERITED?

DR. WM. ALLEN, Charlotte

People with high blood pressure are constantly being sent to us with the simple request that we find the cause of their increased pressure, so that by its removal cure may be brought about. Part of the medical profession as well as the laity seems unaware that not only the cause but the fundamental nature of hypertension is entirely unknown at the present time. The average patient who comes to us with high blood pressure has had his teeth removed, has been told to eat no meat and no salt and has been put on daily saline purging. This combination of procedures illustrates very well the lack of logical thinking in the matter of blood pressure with its consequent illogical therapy. When hypertension began to be measured clinically twenty years ago our first and only thought was to pull the pressure down to normal and the saline

purging of today is largely a survival of this first reaction. The removal of teeth would presuppose that dental infection either causes or helps to keep up hypertension. The restriction of meat in the dietary would indicate that some of the catabolic products formed during the digestion of proteins were responsible for the increase in pressure. The restriction of salt in the diet would indicate that kidney permeability is thereby improved and pressure lowered. If blood pressure is due to focal infection these people need not be punished by dietary restrictions; if blood pressure is caused by eating too much meat we need not cripple our patients by pulling their teeth; if blood pressure is due to poor kidney function to be relieved by salt restriction they need not be punished with other measures based on totally different ideas of causation.

Apparently the statistical study (1) published in 1925 by Dublin, Fisk and Kopf of the Metropolitan Life Insurance Company needs wider publicity. This study indicated that high protein diet, tobacco, tea, coffee, alcohol, dental infections, and constipation seemed to bear no relation to the incidence of hypertension.

Increased blood pressure is found in a variety of clinical conditions, but as the mechanism of its production is unknown it will be considered as a single process for the purpose of this paper, after excluding the increased pressure due to aortic regurgitation, hyperthyroidism, intracranial pressure and acute nephritis in the young following pyogenic infection, leaving the large group classed as hypertensive cardiovascular disease.

A glance at one or two reviews of our present ideas about the cause of hypertension reveals a general mixture of opinion from which it may be concluded that hypertension is either an acquired trait, an hereditary trait, a combination of these factors, or sometimes one and sometimes the other. Thus Moschowitz (2) has recently said, "The causes of hypertension of the greater circulation may therefore be psychic, endocrine or mechanical." His mechanical causes are congenital and need not detain us. His endocrine causes are goitre, suprarenal tumors, and certain phases of glomerulonephritis; he discards the menopause as a factor. Moschowitz considers acquired psychic traits as the chief factor in high blood pressure and states, ex cathedra, that "hypertension is not hereditary in the sense that a gene is transmitted but only appears so because of familial environmental influences," though he submits no evidence to substantiate this statement.

Granger (3) has recently reviewed the suggested causes for hypertension, finding evidence both for and against (a) sclerosis of the medullary arterioles; in contradistinction to Moschowitz he considers (b) nervous temperament a secondary influence and dismisses (c) endocrine disturbances for lack of evidence. He considers (d) arteriosclerosis of renal arterioles as secondary to blood pressure and thinks no other renal condition plays any part except in the terminal rise of pressure due to insufficiency. Granger notes, as have all other observers, the association between (e) obesity and hypertension, but does not consider obesity the primary cause; in discussing (f) focal infection he points out that infections and bacterial toxins lower blood pressure though he thinks infections may secondarily influence blood pressure

by producing arteriosclerosis. Granger thinks the most likely explanation of the cause of hypertension is (g) heredity plus vascular neurosis (hyperirritability) which he defines by saying that "certain individuals present certain susceptibilities in their vascular responses, which are transmitted by inheritance. These individuals gradually pass into a state of vasomotor instability, as the years go on." He submits no evidence to confirm this opinion. Ohler (4) thinks that either heredity or environment or both may be the cause of hypertension, while Barach (5) considers hypertension a constitutional hereditary fault and thinks the response of the hypertension patient to stimuli is somatic and not psychic as maintained by Moschowitz. Neither author submits any evidence to confirm his opinion. Need anything more be said to show the hopeless conflict of our present ideas concerning the cause of hypertension? And yet it seems to me that if we are to make progress in solving this problem it will be necessary to determine primarily whether we are dealing with an acquired trait or one that is inherited.

Up to the present time no comprehensive study of the possible hereditary factor in hypertension has been undertaken. O'Hare, Walker and Vickers (6) found that 68% of 300 hypertension patients gave a family history of vascular disease whereas only 37.5% of 564 controls gave such a history; unfortunately they do not specify what degree of relationship are included in the term family history. Weitz (7) reported investigating the family history of 82 persons with hypertension; 63 or 76.8% gave a history of parental death from heart disease, apoplexy or dropsy; one parent in 54 incidences, both parents in nine incidences; in a control series of 267 persons only 30.3% gave a similar history of parental deaths from vascular disease. These two reports are suggestive but to evaluate the hereditary factor, if there is such a factor, in hypertension will require some such comprehensive statistical study as is outlined below:

(1) A blood pressure census of the population by decades (office, hospital and insurance records).

(2) Construction of tables (similar to those constructed for "The Inheritance of Migraine"; Archives Internal Medicine; 42; 590; October 1928), showing the expected incidence of high blood pressure in parents, siblings and children, if high blood pressure were a dominant trait and if it were a recessive trait.

(3) A consecutive series of persons,
   - I. With high blood pressure.
     1. With known parental pressures.
     2. With known sibling pressures.
     3. With known children pressures.
   - II. Without high blood pressure.
     1. With known parental pressures.
     2. With known sibling pressures.
     3. With known children pressures.

(4) Comparison of blood pressures found in Item No. 3 with expected incidence in Item No. 2.

(5). (a) Only systolic pressures above 160 or diastolic pressures above 100 are to be considered high blood pressure.

(b) Only after 60 years of age will anyone be considered old enough to have had a proper chance to develop high blood pressure.

(c) A history of paralysis, sudden death or congestive heart failure to be considered equivalent to a history of high blood pressure.

I shall take up at present only the first item in this proposed statistical study, namely, the incidence of hypertensive cardiovascular disease in the general population.

At the present time there exists no blood pressure survey of the general population and until the blood pressure of adequate samples of the population can be secured we shall have to depend on figures taken from office and hospital records, and Life Insurance records. Such records are at present unsatisfactory for various reasons. In the first place, the reports on draft men admitted to the army and on life insurance examinations deal almost entirely with young men far below the age of maximum incidence of hypertensive cardiovascular disease. In the second place, the figures from these two sources are based on 140 millimeters of mercury, systolic pressure, as the dividing line between normal and increased pressure; but Palmer (8) has recently shown that of the students whose systolic blood pressure was above 140 mm Hg. at the age of 20, 75% ten years later had systolic pressure below 140, so that whenever we consider systolic pressure above 140, in a young man as beginning hypertension we are wrong three times out of four. Thus it seems best to use 160 mm Hg. beginning of pathologic pressure as suggested by Osler (9).

Dublin, Fisk and Kopf (1) reported a series of re-examinations of their policy holders by the Life Extension Institute finding that 23.2% of those 55 or older whose weight was normal had systolic blood pressure above 155 mm. Hg. and that 32.3% of those 55 or older whose weight was 20% or more above normal had systolic pressure above 155 mm Hg. As 20% of the men re-examined were overweight, this gives a combined figure of 25% of the men 55 or over whose blood pressure was above 155 mm Hg.

Combining the figures reported by Wildt (10) and by Richter (11) both of whom used 150 mm Hg. systolic pressure as beginning hypertension we have 104 individuals between 61 and 70 with 46% hypertension, 212 individuals between 71 and 80 with 43.2% hypertension and 93 individuals between 81 and 90 with 46% hypertension.

Recently Blackford, Bowers, and Baker (12) have reported the incidence of hypertension from a clinic in Seattle doing everything except obstetrics and pediatrics but they included only those individuals whose systolic pressure was above 175 mm Hg. They find that 16% of all patients seen in general practice over 50 years of age have a systolic pressure above 175 mm Hg. Their figures by decades are as follows:

Fourth, 1.2%; fifth, 5.8%; sixth, 12.3%; seventh, 22.5%; eighth, 14%; and ninth, 10%. My own figures tabulated from 6,000 consecutive case histories seen in office and hospital practice are given in the following table:

Decade	Male	Female	Total	Males with HBP	% with HBP	Females with HBP	% with HBP	% both males and females with HBP
1-10.....	166	110	276	0	0	0	0	0
11-20.....	268	319	587	1	.4	2	.6	.5
21-30.....	533	775	1308	8	1.5	8	1.	1.2
31-40.....	630	770	1400	40	6.	67	8.7	7.6
41-50.....	549	476	1025	117	21.3	111	23.3	22.2
51-60.....	380	378	758	140	36.8	151	39.9	38.3
61-70.....	285	198	483	152	53.3	102	51.2	52.1
71-80.....	100	41	141	50	50.	26	63.4	53.9
81-90.....	12	9	21	3	25.	6	66.6	42.8
91-100.....		1	1					
	2923	3077	6000	511	17.4	473	15.4	16.4

The New York Life Insurance Company (13) has recently published their mortality figures for the year 1929 showing that 31% of their total mortality last year was due to diseases of the circulatory system including heart disease (17%), apoplexy (6%), Bright's disease (5%), diseases of the arteries (3%). By age groups this company finds that under 30 years of age circulatory diseases represent 7% of all causes of death, in the age group between 31 and 35, 10%; between 36 and 45, 18%; between 46 and 65, 35% and over 66, 47%.

It may be seen from this brief summary that the incidence of hypertensive cardiovascular disease in the general population cannot be stated with any degree of accuracy, although it is apparently around 45%, after the 60th year.

Conclusions: The value of the hereditary factor in hypertension can be and should be determined by a sufficiently comprehensive and painstaking study of the problem; such a study can be carried out by any physician; a comparatively stationary rural population such as we have in North Carolina offers the best field to make such a study.

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(13) Editorial Charlotte Evening News, March 17, 1930.

Chairman (Dr. W. B. Murphy, First Vice-President, Snow Hill): I want to thank you, Doctor, for that most excellent paper. The next paper on the program is "Childhood Tuberculosis," by Dr. F. Maurice McPhedran, of Phipps Institute, Philadelphia, Pa.

Dr. F. Maurice McPhedran: Mr. Chairman, I am going to acknowledge Doctor McBrayer's remarks, and that I should have done in any case, because I am very much interested in the work that North Carolina is doing, as all of us have been who have followed childhood tuberculosis. We have been doing some very interesting study on the incidence of tuberculosis, both in the cities and the rural communities in Pennsylvania, and especially on the relation of the patient to contact. Several of us have been particularly working on this for the last several years. We have been making a general school survey and we have been working on this survey in Philadelphia. The methods we have been following have been very wide, of necessity. We went through the schools and wherever we found a child that had evidences of tuberculosis we went to work trying to find out what the contact of that child was, and we would usually find it was the mother, father, brother, sister, a cousin or perhaps a servant. Sometimes we would find the baby had been exposed to some relative for only a week or two, and it is a question as to what is the danger and how much, is those cases. Now there is a particular reason for my being interested in the work in North Carolina, and that is because of the way you have been going on with your public institutions in the last few years. Other states have been content with small outlook whereas here it is very broad, here the exhilaration of interest and the enormous amount of public works and public interest is surprising. Now then, take that with the fact that you have a population quite largely negro and you have a problem in connection with which you have hardly an equal. There is good work going on in the other states, but I do not see any other state that has at once the will, the means, and the material to work with as has North Carolina. Now, at this time, with your kind permission I would like to show you some slides, showing the types of lesions with which we are interested, the types of lesions that appear in tuberculous children. And right here I want to stop long enough to say, that we could accomplish much better results in our work if we had better X-ray equipment with which to work. It is almost impossible to get the results desired with the inferior equipment that the X-ray people are putting out at the present time. The X-ray firms tell us what wonderful machines they are giving us, but we all know there is much room for improvement, and I think if we would all touch up the X-ray manufacturers about this matter we would get better equipment sometime in the near future, letting them know that their equipment is sadly inadequate. (At this point Dr. McPhedran illustrated quite a number of slides, and talked

at length, which would be of little value in this record unless the slides could be duplicated herein.)

Chairman: We will now have a paper by Doctor John B. Wright, of Raleigh, "The Practical Value of Bronchocopy and Esophagoscopy in Diagnosis and Treatment"; Doctor Wright.

Dr. John B. Wright: Mr. Chairman and Gentlemen, I am indeed glad to follow this wonderful address with the demonstrations, by these pictures of chest lesions. And I would have been glad to have had Doctor McPhedran outline a little in his discussion, some of the methods in making his diagnosis other than the X-ray pictures. The value of bronchoscopy and esophagoscopy are of inestimable importance in diagnosing conditions in the food and air passages, and it's a very recent field in medicine and has made wonderful progress.

There is no specialty in our profession that has made more rapid progress in recent years than that of direct inspection of the esophagus and tracheo-bronchial tree. It is now recognized that the esophagoscope and bronchoscope are two very important instruments of use in diagnosis and treatment. This statement is substantiated by the constantly increasing number of cases that are being referred to the endoscopist. (I use the word endoscopist in the place of bronchoscopist and esophagoscopist.) These cases are not all foreign body cases, although I do not mean to minimize the number or the importance of foreign bodies that are found in the food and air passages. The phenomenal success of endoscopy in diagnosing and treating diseases is due to many causes. Prior to the entrance of the esophagoscope and bronchoscope as instruments of practical value there was no means of making a positive diagnosis of many diseases of the food and air passages. Example, carcimona of the bronchus, ulceration of the esophagus, granuloma and papillomas in the bronchi, non-opaque foreign bodies and numerous other conditions. The bronchoscope is nothing more than a lung speculum, to be used in examining and treating conditions in the tracheo-bronchial tree. Just as the rectal speculum is used in examining and treating rectal diseases, the vaginal speculum in diagnosing and treating disease of the vagina. The same is true of the esophagoscope.

There are many difficulties in successfully using these two specula. They are not always safe instruments in the hands of the inexperienced. (This is not the case with the vaginal speculum or the rectal speculum.) Especially is this true in regard to the esophagoscope. The endoscopist must be thoroughly familiar with the appearance of the mucosa of both the esophagus and the tracheo-bronchial tree. Also he must familiarize himself with all the landmarks of both of these passages and be able to instantly differentiate one from the other. I once saw an inexperienced endoscopist pass the bronchoscope into the esophagus without realizing the mistake. With inexperienced assistants and an inexperienced endoscopist the procedure is really hazardous. A heavy handed operator labors under many difficulties to become a fairly successful endoscopist. To ever attain success in endoscopy the operator must have a gentle touch and be in constant practice. The surgeon who can successfully remove the jaw or amputate a leg would find it hard to temper down his muscular touch so as to be able to remove a peanut

kernel from the bronchus of a young child without crushing the kernel. "If an esophagoscope is inserted into the pharynx and simply pushed downward, the one passage it would *not* go into is the esophagus. Only a slight push is necessary to send it through the hypopharyngeal wall where it will meet with less resistance in its progress down between the layers into the mediastinum than it would if it were going down inside the lumen of the esophagus." (From Jackson.)

The endoscopist must have acute vision, if he has not normal vision, he must, to be successful, be able to have his refractive error corrected to give him normal vision. It has been suggested that he should be able to see and remove black thread from a piece of black cloth and white thread from a piece of white cloth. This he should be able to do with mosquito forceps, through a two millimeter bronchoscope. The endoscopist must be trained to judge distances with one eye through the endoscopic tube. This can only be done by constant practice. The laryngologist who is constantly measuring distances in the throat would be, by practice, better qualified than the surgeon who does his work in an open field. A successful endoscopist is born and not made. No endoscopist can attain any degree of success without being thoroughly trained himself and possessing a well equipped kit of instruments, all of which he must personally be familiar with and have at least two experienced assistants. In addition to the above he must have the cooperation of a competent Roentgenologist, a capable surgeon and an experienced internist. It has been said the internist can tap, look, and listen on the outside, the Roentgenologist can look through the chest, and bronchoscopist can look directly inside the lungs. It is no longer necessary to guess what is on the inside of the lungs when by means of the bronchoscope you look directly inside and are able to ascertain positive information. The bronchoscope is of inestimable value in diagnosis and treatment of such diseases as neoplasms of the lung, bronchiectasis, abscess of the lung, mediastinal suppuration with bronchial fistula, interlobar empyaema, purulent tracheo bronchitis, strictures of the trachea and bronchi, all non-opaque foreign bodies in the tracheobronchial tree, all malignant diseases of the air passages, unexplained dyspnea, obscure thoracic disease, unexplained hemoptysis that persists, unexplained cough, that persistent, unexplained expectoration, (continuous) tracheo-bronchial diphtheria, Vincent's infection of the tracheo and bronchi; all of these diseases will not be discussed, but a few remarks about a few of them is important. Bronchiectasis can very often be cured by bronchoscopic treatment, when due to a foreign body, the removal with a reasonable amount of after treatment will cure the bronchiectasis; when caused by cicatricial bronchial stenosis or an endobronchial neoplasm the dilatation or removal of the neoplasm will allow proper drainage and cure the bronchiectasis. Hemorrhage is more common in bronchiectasis than in any other disease of the lung. (Mayo Clinic.) Continuous hemoptisis unexplained, is an indication for bronchoscopy. Certain cases of lung abscess can be cured by bronchoscopic aspiration and injection of medication, at least every case of lung abscess should have a bronchoscopic examination.

Post operative massive collapse of the lung can often be relieved by

aspirating a plug of tenacious secretion blocking a bronchus. Drs. Tucker and Lee think this finding is sometimes thought to be post operative pneumonia.

BRONCHOSCOPIC EXAMINATION GIVES DIAGNOSTIC AID

1. By definite information as to the extent and location of the lesion.
2. By allowing the removal of secretions from the bronchi uncontaminated, so that on culture the infecting organism may be shown.
3. By determining the condition of the tracheo-bronchial tree.
4. By removal through the bronchoscope of tissue for histologic examination.
5. By the bronchoscopic introduction of lipoidal and Bismuth subcarbonate to aid in diagnosis.
6. By differentiating asthmatic wheezes, for all is not asthma that wheezes there are many conditions in the bronchial tree that give typical asthmatic symptoms. Some of which are carcimona, foreign body in the bronchus, some forms of non-specific suppuration in post-tonsillectomic infection, and post-influenzal suppuration.

ESOPHAGOSCOPIC EXAMINATION GIVES DIAGNOSTIC AID

1. By a direct inspection of the mucosa of the entire esophagus, thereby locating any ulcers, granulation tissue or any neoplasms, also any pressure from a contiguous diseased organ as amerism of aorta or mediastinal growth large enough to partially obstruct the lumen of the esophagus.
2. In differentiating between a foreign body (non-opaque) and an esophageal ulcer. Richmond McKinney reports a case of a woman with a history of swallowing a plum seed. Esophagoscopy revealed an ulcer which was cleansed and treated, thereby relieving the sensation of a foreign body in the esophagus. McKinney reports another case of delay in esophagoscopy. This time the ulcer had perforated the esophagus into the trachea. Fluoroscopy showed only slight retardation in the progress of the Barium milk. The Roentgenogram revealed a barium filled bronchial tree.
3. In carcimona of the esophagus it is without symptoms until the condition is well advanced. The first symptom in most every case is dysphagia and this does not develop until the carcimona has developed large enough to partially obstruct the lumen of the esophagus. A large bolus of food always is the instigator of the symptoms of dysphagia. Meat is most frequently the substance of which the bolus is composed.

BRONCHOSCOPIC TREATMENT AIDS

1. In removing granulations, in dilating bronchial and tracheal strictures.
2. In aspirating tenaceous secretions that cannot be coughed up because of inadequate action of the cilia of the bronchial mucosa.
3. In local applications of medicines to lesion in the tracheo-bronchial tree. In removing foreign bodies from the tracheo-bronchial tree —foreign body cases are more numerous than all others combined with the writer.

5. In aspirating pus from post-tonsillectomic pulmonary suppuration, also all conditions in the lung in which there is an excessive amount of pus formed. In aspirating and treating medicinally bronchiectasis post-influenzal suppuration.

6. All pulmonary lesions of an undetermined nature should be examined bronchoscopically and many can be treated through the bronchoscope.

7. In aiding the internist to clear up all doubts as to diagnosis. Many lives are lost by delay in bringing cases of questionable diagnosis to the endoscopist. I give as an example the following case record:

Case 1. A child, age seventeen months; while mother was shelling lima beans, child was playing with the shelled beans and became violently strangled, coughing and breathing with great difficulty. This occurred 2:30 p.m. September 21st. The child continued to breathe so labored that the family physician was called, he gave it some placebo and advised if it was not better by morning to let him see it again. The next day the child was no better, the physician carried it to an eye, ear, nose and throat specialist. They decided the child had laryngeal diphtheria and gave it seven thousand five hundred units of diphtheria antitoxin. The next day the child was much worse, the mother still insisting the child had inhaled a bean. She started to Raleigh with the child but met one of their local physicians in the road and stopped him and had him examine the child. He agreed with the other two and advised the child be hurried back home and given rest and supportive treatment. The next day, September 24th, the mother was so insistent that they brought the child to me. It was cyanotic and gasping for breath, before we could get preparations completed for the operation the child expired. I decided as the child was on the operating table and everything ready for the bronchoscopy I would settle the question as to whether the mother or the doctors were correct in their diagnosis. I passed the bronchoscope, asperated the tenaceous secretions and found and removed the bean from the left main stem bronchus.

Case 2. Child ten years of age had been operated on for tonsils and adenoids, had a normal reaction from the operation, after three days breathing began to be labored, rather gradual at first, no fever, pulse normal. For two days breathing gradually became more labored, child was brought to hospital, a physical examination was negative save the wheezes in the bronchi, of a dry nature. Foreign body was suspected, though there was no history of having inhaled any foreign substance. A post-tonsillectomic infection was considered, no physical findings would point to any infection save the labored breathing. Bronchoscopy was advised and upon passing bronchoscope, tracheo-bronchial diphtheria was discovered. A portion of the secretion, uncontaminated, examined microscopically confirmed the diagnosis.

In my limited experience I have had three cases of tracheo-bronchial diphtheria, neither of the cases was suspected, but all were diagnosed as suspected foreign body cases.

Case 3. A three year old child who was suffering with an acute rhinitis was eating a raw sweet potato. The child seemed to become strangled on the potato and had a severe attack of coughing, all through

the afternoon the child suffered severely with the cough and labored breathing. It rapidly grew worse, a physician was called in. When the history of the child becoming strangled while eating the potato was given, the physician advised the child be taken to an endoscopist. I saw the child the next day about noon. It was suffering with labored breathing, chest filled with rales, temperature 102 Fahrenheit, Drs. Root and Bugg were consulted. A Roentgenologist was called in and Roentgenograms taken. The picture was not conclusive nor did it give us any idea as to where the foreign body was located. A bronchoscopy was advised. The bronchoscope was passed, the mucous membrane of the entire tracheo-bronchial tree was oedematous and very red. There was quite a lot of whitish thin fluid in the bronchi, this was asperated. The entire bronchial tree of both lungs inspected, no potato was found. The asperated fluid, uncontaminated was taken to the laboratory. Upon culture, diplococci pneumonia predominated. The child expired of pneumonia the second day.

THE TREATMENT OF ESOPHAGEAL CONDITIONS THROUGH THE ESOPHAGOSCOPE

Strictures following burns of the esophagus from drinking caustic solutions has been the most frequent condition that I have met with in treating conditions in the esophagus. I shall not attempt to discuss the treatment of esophageal strictures in this paper, suffice it to say the only intelligent way of treating an esophageal stricture is by inspection through the esophagoscope, unless it be where the lumen of the esophagus is completely closed, then of course the retrograde method of dilatation would be the proper method of procedure. Next in frequency to strictures, I have found foreign bodies lodged in the esophagus. The most frequent place in my experience is just below the entrance into the esophagus. Coins, buttons, and beans and flat objects are the most frequent to find lodgment at this place. The old crude and dangerous method of passing a bristled probang is mentioned only to be condemned. The only safe and accurate procedure is to slowly and cautiously pass the esophagoscope, inspecting every side of the lumen of the canal as the instrument slowly is passed downward. The most common failure is for the esophagoscope to pass over the foreign body as it enters the lumen of the esophagus. If the foreign body has been left in the esophagus for several days it will cause an ulcer which becomes dangerous. If not extremely careful in removing the foreign body, the esophageal wall will be ruptured.

There are many other conditions of the esophagus in which the esophagoscope is useful in treatment, such as ulcers, removal of granulation tissue and neoplasms and in passing radium capsules into the esophagus for treatment of carcimona.

Chairman (Dr. N. B. Adams, First Vice-President of Murphy): I want to thank you, Doctor Wright, for your highly interesting and instructive paper. Now, we will have an address by Doctor E. S. Boice, of Rocky Mount.

INDICATIONS FOR SURGICAL TREATMENT OF GASTRO-DUODENAL ULCER WITH REPORT OF THIRTY-TWO CASES

EDMUND S. BOICE, M.D., F.A.C.S., Rocky Mount, N. C.

The etiology of gastro-duodenal ulcer is unknown and consequently the treatment is largely empirical and far from standardized. By some medical management is urged unless complications develop, while others, notably Deaver, advocate operation almost routinely. The type of operation advised by various surgeons ranges from simple excision of the ulcer in certain cases to partial excision of the pyloric sphincter, some plastic procedure on the pylorus, gastro-enterostomy with or without excision of the ulcer, and slight to extensive resection of the pylorus and stomach to influence acidity by securing a reflux of duodenal contents and by reducing the amount of acid-secreting mucosa. The very multiplicity of operations of course means that none gives a sufficiently high percentage of cures to secure anything like unanimous approval. Indeed, Emery and Monroe, reporting 556 cases treated in the medical and surgical services of the Peter Bent Brigham Hospital in Boston, conclude that ulcer is a chronic disease for which all known methods of treatment are merely palliative and that cure is probably rare.

Possibly because of the uncertainties of operation there seems to have been an increasing tendency in recent years toward a trial of medical management at least for patients seen reasonably early, reserving surgery for certain definite indications. These indications as listed by Finney and Hanrahan are perforation; organic obstruction; impaired motility; repeated hemorrhages; persistent pain due to local peritonitis or adhesions; unrelieved pyloric spasm; repeated failure of medical treatment; economic factors necessitating a limited period of disability; the possibility of the ulcer being secondary to appendicitis or gall bladder disease, and, in stomach cases, the danger of malignant degeneration. Fortunately in the duodenum, where the majority of ulcers occur, cancer is little to be feared as it is almost unknown. Admittedly there may be some risk of perforation or hemorrhage occurring in the patients reserved for medical management but these accidents are rare in properly treated cases, particularly early in the disease.

At the Park View Hospital, where two internists, Dr. C. T. Smith and Dr. W. B. Kinlaw, work in close association with two surgeons, Dr. B. C. Willis and the writer, we have followed the conservative plan above mentioned. During the past fifteen years 86 patients have been diagnosed as having ulcer of the stomach or duodenum. In 47 instances immediate surgery did not seem to us to be indicated and these patients were given a trial of medical treatment. Most of them were referred back to their family physicians with the recommendation that the Sippey routine be followed as closely as possible. This sort of medical management is not ideal but it has been necessary because of economic conditions. Indeed the advisability of prolonged hospitalization is one of the greatest drawbacks to the medical treatment of these cases. The only alternative, treatment in the home, is probably largely responsible for many failures and recurrences, since ulcer patients like diabetics are

prone to relax their dietary restrictions once their symptoms are relieved. However, that hospitalization is not absolutely necessary is shown by the fact that many of the 47 patients obtained complete relief, while, so far as we can learn, none has developed either perforation or hemorrhage. True, a number still have some trouble but it has not yet been severe enough to send them back to the hospital unless this has occurred in the few cases we have lost track of. Undoubtedly, however, some of these patients would be better off if operated upon and probably a fair percentage of them will eventually come to operation.

In addition to the 47 cases given medical treatment there were five with definite indications for surgery who were not operated upon. Two of these, both men, were brought to the hospital moribund from peritonitis apparently secondary to perforated duodenal ulcer. One died forty-five minutes after admission and autopsy proved the diagnosis to be correct. The other, who survived 17 hours, gave a history so typical that the diagnosis was practically certain. Unfortunately autopsy was not permitted. The other three showed every evidence of chronic duodenal ulcer with pyloric obstruction but all refused operation. There were also two men who, after being treated through severe hemorrhage, declined operation. One of these has been lost track of, the other died of pneumonia two years later without having had further bleeding.

The 32 cases remaining were operated upon either by Dr. Willis or by the writer. Twenty-five of the patients were white and seven colored. Twenty-five were males and seven were females. The youngest was 18 years of age, the oldest 62. Nine were between 18 and 30 years of age; 12 between 30 and 40; 5 between 40 and 50; 3 between 50 and 60; one was 62. In 25 instances the duodenum was involved, 20 of these being males and 5 females. In 5 patients, 4 males and 1 female, the ulcer was found to be in the stomach. In the remaining two, one male and one female, the ulcer was in the pylorus.

Nineteen patients were operated upon because of perforation, three because of hemorrhage, and ten for symptoms of obstruction, adhesions, etc. Of the 19 patients with perforation, three had their ulcer in the stomach, one in the pylorus, and sixteen in the duodenum. In 14 cases the perforation was acute with free escape of the contents of the viscus. Thirteen of these patients were males. In 5 cases, all in the duodenum, the perforation had been more gradual with a consequent secondary localized peritonitis walled in by adhesions. In these slowly perforating ulcers the need for immediate surgical intervention is of course not so urgent as in the acute condition, but the technical difficulties of the operation may be much greater.

In the acute cases the elapsed time between the probable occurrence of perforation and operation was 3 hours in one case, 8 hours in 2 cases, 12 hours in 1 case, 16 hours in 1 case, 18 hours in 1 case, 24 hours in three cases, and 48 hours in 1 case. In the remaining instances the time was not definitely recorded in the histories.

The condition of 7 of the acute cases seemed too precarious to justify any more elaborate operation than a simple closure of the perforation. Five of these were drained and two closed without drainage. In the remaining 7 acute cases a modification of the Heinike-Mikulicz pyloro-

plasty was used, the ulcer being excised and pylorus widened. Four of these cases were drained.

Three of the acute cases died, a mortality of 21.4%. One of the three, a white male, age 43, had been perforated 16 hours. Following perforation he had been given purgatives and a quart of mustard water. His pulse rate was 154, he was markedly cyanosed and practically moribund, and he should not have been operated upon. The two other deaths, both of colored men seen late, resulted from colon bacillus peritonitis.

For the 5 slowly developing walled off perforations pyloroplasty was used in two instances, gastro-enterostomy in two, and pylorectomy in one. This last case, a female, was an example of the so-called "kissing ulcer," and was the only one of the five to be drained.

The question as to drainage in acute perforation is interesting. While acute perforation of an ulcer usually produces immediately all the symptoms of a severe peritonitis, generally, though not invariably, with a rigidity literally board-like, it is not often necessary to drain cases seen in the first few hours if proper cleansing with the suction tube is carried out. The peritonitis is at first due chiefly to the acid gastric juice and is largely chemical with relatively little actual infection present. The cases seen later of course show a progressively increasing bacterial peritonitis and require drainage. The justification of omitting drains in early cases is demonstrated by the fact that all of our cases so treated recovered.

Of the fifteen patients with perforation who survived operation 12 are known to be living, two are untraceable, and one is dead. This man, operated upon for acute perforation of a gastric ulcer high up on the lesser curvature, returned four months later with symptoms of intestinal obstruction. Operation disclosed a most extensive tuberculosis peritonitis which proved fatal. This finding was especially interesting in that there was no evidence of tuberculosis at the original operation at which the appendix and lower abdomen had been explored before the upper abdomen was examined. Two men, for each of whom a simple closure of a perforated duodenal ulcer had been done, later developed pyloric obstruction. One submitted to a gastro-enterostomy ten years ago and has been well since. The other, operated upon four years ago, has had persistent symptoms with some bleeding, but manages to hold his weight and refuses further operation. Eight patients have not consulted a physician for their stomach trouble and have apparently been well for varying periods up to eleven years. All but one were operated upon two or more years ago. Two patients have been much improved and able to work regularly, but have had some return of symptoms at times, always relieved by dieting. As a matter of fact, it seems certain that all patients who have undergone an operation for ulcer should therefore refrain from gross dietary indiscretions if they do not wish to risk a return of symptoms.

The advisability of immediate operation for the arrest of acute hemorrhage has been much debated. Some surgeons advocate it strongly, though probably the majority are opposed to it. Judging from published reports it is probable that in the hands of the average surgeon

the mortality with immediate operative treatment will be higher than with medical treatment. However, after the hemorrhage has been controlled and the patient's strength is restored the advisability of operation to forestall a recurrence of bleeding merits serious consideration. Certainly attacks of hemorrhage recurring in spite of treatment may be considered sufficient justification for urging operation.

Seven of our patients, all white males, were admitted because of sudden hemorrhage, and all were carried through the attack successfully. In two instances, both with moderately severe bleeding and no previous trouble, operation was not advised. In two other cases, as previously mentioned, operation was urged but was not accepted. Three patients were operated upon. The first of these, a man of forty years, had been treated by another surgeon for bleeding duodenal ulcer. Subsequently the ulcer was excised and gastro-enterostomy done. We saw him three years later for a recurrence of bleeding, and after treating him through the attack explored him for a suspected gastro-jejunal ulcer but none was found. We did find an unexplained rupture of a small jejunal vessel with submucous hematoma. Incidentally this man had a four plus Wasserman reaction. Since the last operation twelve years ago he has had no further stomach symptoms. The second case, a man of 22 years, was operated upon ten and one-half years ago, an excision of a duodenal ulcer and gastro-enterostomy being done. He remained symptom free for six and one-half years when, following a period of unrestricted diet, he had a recurrence of bleeding for which medical treatment only was used. Since that time he has remained well and at work. The third case, a man of 31 years, was treated by pyloroplasty with excision of a duodenal ulcer, and has had no return of stomach symptoms for over five years. The two patients with a recurrence of bleeding illustrate the well recognized fact that gastro-enterostomy, even when the ulcer is excised, is by no means a guarantee against further trouble. They also further emphasize the statement previously made that operation does not mean unlimited license as regards diet.

Of the ten remaining cases, three with gastric ulcer were operated upon for symptoms of retention and because of the danger of malignant change. For one, a white woman of 32 years, a Balfour cautery operation with gastro-enterostomy was done 10 years ago. She is known to have remained well for 8 years. Since then she has not been heard from. The second, a white woman, age 62, with a large ulcer near the pylorus was subjected to partial gastrectomy by the Polya method five years ago and has been well since. In the case of the third, a white male, age 50, the ulcer was large with considerable secondary inflammation and a partial gastrectomy was indicated but the man's condition was too weakened to permit of more than a simple gastro-enterostomy. Since operation two years ago he has been actively at work on his farm and has not consulted a physician.

Seven of the ten cases were operated upon for duodenal ulcer with varying degrees of obstruction and retention, three of them having secondary adhesions to the gall bladder. For five a pyloroplasty was done, for two gastro-enterostomy with removal of the ulcer. One of the seven did well for ten days when he developed an acute mania, dying

three days later. Autopsy was entirely negative, the gastro-enterostomy being in good condition with no leakage or infection. One man, for whom pyloroplasty was done because of pyloric obstruction, died of nephritis three years later without having had a return of his stomach trouble. The others are all living and have enjoyed good health over periods varying from one to five years since operation.

In the entire series of 32 patients operated upon there were 5 deaths, a mortality of 15.6%. Two of the fatal cases had advanced colon bacillus peritonitis when first seen, while a third was so overwhelmed as to be almost moribund and should not have been operated upon at all. In all three perforations had occurred 16 or more hours before operation. No adequate explanation can be offered for the death from acute mania. The boy of eighteen dying of shock, while a bad risk, should not have been lost. We believe that ether narcosis had much to do with the death, and feel that under spinal anesthesia he would have survived. This record, while not encouraging, compares favorably with many other reports dealing with large numbers of acute perforation, the complication accounting for three of our deaths. Our 21.4% mortality for the acute cases is probably somewhere around the general average, though some reports show as high as 30 or even 50% mortality for cases seen late, while few death rates are below 18 or 20% except in cases operated upon in the first 12 hours after perforation.

Therefore, in evaluating surgical treatment, our total mortality of 15.6% may be misleading if one fails to consider that in the great majority of the cases the patients were literally forced into operation. Certainly when surgery is an elective procedure no such death rate should prevail. Similarly the late results should have been better had these patients been operated upon before rather than after their complications had developed. However, none of the thirty-two had been suspected of having an ulcer prior to the onset of the symptoms for which they were sent to the hospital, and but few of them had consulted a physician at all.

After reviewing the records of these 32 patients we are forced to conclude that we have been too conservative in withholding operation from certain of the 47 patients put on the Sippey routine, though we still feel that the majority of them were entitled to a trial of non-operative management. In this connection it is interesting to note some comparisons between the results of medical and surgical treatment made by Finney and Hanrahan. These writers, quoting statistics prepared by Crohn, state that the immediate results of medical management show 86% of patients apparently cured, but that within four years 50% will have relapsed, most of these recurrences becoming apparent during the second six months. They also state that about 90% of patients surviving the "usual surgical procedures" are markedly benefited, but that before this percentage is reached an operative or immediate (six months) mortality of 10% must be deducted. Considering these two statements together it hardly seems justifiable to operate upon all cases, nor is it wise to stick to medical treatment too long if the response is not prompt. The most conservative plan would seem to be to operate upon those cases presenting definite indications for surgery, and to give

the others the 50% chance of cure by medical means. These medically treated cases should then be followed closely with a careful check-up of their progress every six months, and the patients not responding to treatment or those who, because of economic or other reasons, are unable to follow treatment should be advised to resort to surgery before complications develop.

CHAIRMAN: Doctor Boice, I wish to thank you for that splendid paper. We will now proceed with the paper from the Section on Pediatrics, "Pediatrics looks at Psychology," Doctor L. W. Elias, of Asheville.

DR. L. W. ELIAS: Mr. Chairman, I have at last, after a mighty effort, got the consent of my conscience to give you just a brief outline of this subject.

PEDIATRICS LOOKS AT PSYCHOLOGY

We are all familiar with the statement that there are more beds for mental cases in the United States than for all the other ills combined; and as a further challenge to doctors we are told that one-half of these cases are preventable. Yet this but faintly suggests to hosts of men and women throughout the land, who are nervous and irascible, who react violently to every little annoyance in life and rebel at everything that displeases, those who are beset by all sort of phobias and unhealthy mental attitude and make life hard and reduce the individual efficiency. Not only our jails are full of these to overflowing, but the whole nation is tainted with an epidemic of maladjustment to life. The most tragic element in the situation is that much if not most of this might have been prevented by proper early training.

While reading a pamphlet and musing along this line, Willie Jones came in with his mother, submitted to examination without protest and conducted himself like a wide-awake but well-behaved little youngster of five years. His visit was scarcely over before Fauntleroy Smith blew through the door and started a devastation only second to the Johnstown Flood because of the limited area involved. With this devastation went all the while teasing and whining and snatching at this and that, followed by howls of rage and tears if the nurse was quick enough to check destruction. His frank and sincere abuse of the doctor and all concerned was of minor importance. Meanwhile his mother kept up an accompaniment of explanations and assurances as to the unusual child that he was, so kind-hearted and adorable and so misunderstood, interspersing these statements with mild expostulations against his depredations and ill will. You have all had this child in your office. When Fauntleroy Smith was gone at last, two questions came up; first as to Willie Jones. He came in because of a mild skin disease, but a badly leaking heart was found also. Should his mother be told of this serious handicap, or be spared that pain as long as possible? The answer was perfectly obvious that the mother should know what was wrong with the boy's heart and of its serious nature, together with the necessary measures to protect it. This answer is simple, compared to the second question with regard to Fauntleroy Smith. He was brought in to be vaccinated before starting to

school. What was one's duty in the light of the antisocial nature which he was developing?

It is usually worse than a thankless job to tell a doting mother that her little idol is not unusual, rather he is one of that all too usual class of badly spoiled children. As to his being misunderstood, that is a mistake, because you understand perfectly that he is headed for one of those numerous beds of the mentally sick. If he escapes bed-ridden invalidism, the best that can be hoped for him, is an unhappy youth, merging into a fractious adult who has never learned to take life in such a way as to enjoy it, nor to let others do so. This statement to a mother would call out a violent argument on her part to the effect that the doctor was just like the boy's father and the others, that the mother alone understood him. Finally she would leave unconvinced but mad. The doctor in disgust feels that he has uselessly meddled with family affairs and lost a patient. Possibly we would have had better results with Fauntleroy's mother, if we had said, "Mrs. Smith, Fauntleroy is a fine boy"—all children are that, poor little mishandled creatures—"but I notice some signs of nervousness in him, is he being taxed or annoyed in any way?" By disarming Mrs. Smith through one lead or another, she may bring out the very points that you wish to discuss about Fauntleroy. You may or may not succeed. Yet the question is still there. What is the duty of a doctor to a child of Fauntleroy's type, that passes through his hands? In the light of that vast array of mental beds, and the other mental misfits that might have been avoided, we feel that some where there is a serious responsibility in his case regarding his mental attitude as there was in the case of Willie Jones' heart.

There are all sorts of families, good, bad and of the mixed type. There is the highly irritable pair, flying to pieces at every small annoyance. The children have reproduced their conduct, because they know not how else to meet life. Willie Jones' parents are a normal even-tempered pair, who see no reason to tear their hair over every little thing that fails to please. At any rate they take their worries like good sports. Willie, brought up in this atmosphere, and with this example, reacts in the same way as his parents. He simply does not know how to fly to pieces over little irritations.

Practically it is far better to have an ignorant or foolish couple, who would cheerfully present a united front to a child so that he would get some clearcut ideas about meeting life, rather than two fine highly intelligent well-meaning people who are an irritable wrangling pair, verbally fighting out their differences before the child, leaving him in a maze of uncertainty as to which way to go or how to act. From such mental soil is produced the most pitiful child of all. Subconsciously aware that he has lost and confused with no clear training with which to meet life, he anxiously tries out various lines, but usually it is a losing game. He becomes timid, or a bully, is cruel or cowardly, his rebellion against his inner feeling of being trapped and cheated, expresses itself in outbursts of rage and constant irritability. Poor little mentally lost child, that we all dread and abuse. Poor fractious misguided parents, who defeat the highest goal of marriage, because they have each magnified little differences, until they have destroyed that

fine union out of which children might have developed into normal, happy, useful men and women.

One case of this sort, which you can duplicate over and over—I am trying to show some of the difficulties in the solution of our problem—was a six year old boy, so nervous that he had lost his appetite, slept fitfully and fearfully, awaking at the slightest disturbances, and tearfully wondered if anyone was being killed. He teased and worried his parents, and was a cyclone of storms and tears. Really the nearest a nervous wreck that you ever saw out of bed. His parents differed violently over him, in his presence. Since both parents were fond of him, the boy played favorites with one or the other as suited his needs, and so obtained about every foolish thing that he wished. His appetite was so poor that his mother began to fear that he would starve to death, and brought him a suspicious, rebellious, abusive little bundle of nerves, to have his appetite restored. Nothing was found physically wrong. An interview was secured with both parents, and it was made clear to them that no matter what foolish order one gave, short of death or permanent ill health, the other should stand with him or her before the boy, that a little physical suffering was far preferable to the refined cruelty of the mental suffering that they were inflicting. They finally agreed. The boy was soon eating so much that his mother grew anxious, lest he should overdo the matter. The mother also reported that the father was real sweet about it all, and what had been done for that family was worth five hundred dollars.

But the parents are not our only trouble. A grandmother lives next door to a boy of two. The family gives his sun baths on the opposite side of the house, all the while keeping a sharp lookout for the old lady. Of late the little fellow has been made so nervous by the grandmother's unwise interference that he cannot sleep, and his mother plans to go away with him until he recovers.

Sometimes it is too much attention from the relatives and friends. One unusual case of this sort, was a bright, 22 months old baby, who had such terrific pain in her side for hours at a time, that finally larger and larger doses of morphine were required to quiet her. She was put in a hospital away from the family. After crying herself to sleep the first night, she had no further trouble, with one exception, when she flew into a rage, violently overthrew all the little chairs, and then clapping her hands to her side, shrieked as of old "Oh, my side, I can't stand it, I can't stand it." She received no morphine for this and was sent home in a week, with rigid advice against being handled by the members of a large household of relatives and boarders. She has had no recurrence.

If our troubles ended here, we would still be fortunate. But we have further handicaps the attitude of society at large. It is hard for one mother to keep her children from exciting or otherwise harmful movies, when all of the neighbors children attend. It is hard for the children to go early to bed, much less to sleep, when all the other little youngsters in the neighborhood are noisily playing until a late hour. It is hard to have little children in school for longer hours than grown men were kept when we were in college. It is harder still to see the little ones leave school, not to romp and play in the fresh air, but to do home work,

neatly written out in pen and ink. Next day the child is tired and nervous, and so is the teacher, who sat up the night before looking over the papers handed in during the day. The meeting of this sort of child with this sort of teacher, does not make for the best type of nervous development.

When pediatrics looks at this psychological picture of life, with its happy children on one side, later passing through the experiences and difficulties just hinted at, and so many coming out broken on the other side, to fill up those beds of the mentally sick, or at best coming through scarred and bruised for life, it is enough when once seen and understood, to sear itself into the memory forever. Not only this, but a great cry arises in the heart, "save the happy little babies from such a fate, give them instead a normal development into a happy useful life." And surely it is the responsibility, as well as the glory of the medical profession, to bring this to pass. Pediatrics has laid the world under a debt of gratitude for the prophylactic work done along physical lines. May it not go a step further, and achieve greater renown by saving these innocent little ones? A few measures along broad lines are suggested that should not be burdensome to doctor or mother, and yet guard the children from much evil and gradually produce a happier race.

As mental prophylaxis, two lines must be followed: First, the infant must be so cared for that it is protected from detrimental influences. In the second place, it must be taught habits and attitudes which will enable it to develop into a wholesome adult. Among things to be taught, which are absolutely essential are: obedience, self-control, unselfishness, and a desire to do and be, rather than to merely acquire and possess. It would be saved immense wear and tear on its nervous system, if it learned to take the petty worries and disappointments of life gracefully. Many other points will occur to you, as possibly equally necessary. Over the whole situation the doctor must keep a general supervision. This will necessitate frequent examinations of the child from its earliest babyhood on, also conferences with the mother, and at times with both the mother and father. But the matter need not be made burdensome. When the baby is brought for its usual physical examination, not only weight and measure and look for signs of rickets, etc., but note its mental behavior. Is the baby too alert and responsive to attention? Inquiry will usually show that the baby is receiving too much attention; caution the mother that the signs you have found are the early forerunners of restlessness, poor sleep, fretfulness and the like.

With the little child we must not only watch for symptoms of nervousness, but also for signs of bad traits creeping in. We must try to nip these in the bud, by calling the mother's attention to them, and explaining the serious outcome. Also the positive side should be emphasized of developing desirable characteristics in the child, such as those mentioned above. While the mother and child are together, the doctor should watch the reaction of each on the other, and by all means possible learn what is going on at home and on the outside. The doctor must help the mother guard the older child from outside influences. Here she needs his counsel and moral backing, in the fight against the unhealthy customs around her.

In the school child the doctor must watch for signs of mental strain, that begets a nervous anxiety, poor appetite, restless sleep, with the attendant train of trouble.

When puberty is reached and the whole being is undergoing change, one of the most trying times in life has arrived. The youth is subconsciously aware of strange stirrings within, day dreams, followed by aimlessly impetuous actions. All the depths of his being are broken up, to be melted and recast. He feels it but does not understand himself and is often as little understood. Yet the forces that bear upon him at this period largely determine the shape his mind shall wear when he comes from the moulds. It requires great forbearance and wise sympathy to insure happy issue from this revolutionary change.

To summarize: The attempt is made to show the tragic loss of efficiency, health and happiness to the race, because of poor and evil mental training with perverted mental attitudes. The ends are the same, but pediatrics point is not so much to save future men and women from such conditions, but rather to see that all the happy babies in our care are given the best chance in their growth to rise from one stage of happy normal life to another, until at last they arrive at manhood and womanhood, in the full power of a joyous useful life. An outline is suggested as a help to this end. The problem has been stated, the results rest largely in our hands. What are we going to do about it?

The Third General Session adjourned.

FOURTH GENERAL SESSION

The Fourth General Session was held in the ball room of the Carolina Hotel on Wednesday, April 30, 1930, and was called to order by the President, Dr. Crowell, at 8:10 p.m.

Dr. Charles DeWitt Colby, Asheville, read a paper entitled "Tuberculosis and Uncinariasis: An Analysis of Sixty-Eight Cases."

TUBERCULOSIS AND UNCINARIASIS—AN ANALYSIS OF SIXTY-EIGHT CASES

Dr. Charles DeWitt Colby and Dr. Karl Schaffle,
The William LeRoy Dunn Memorial Clinic, Asheville, N. C.

In spite of certain influences and measures of abatement, both tuberculosis and uncinariasis are more prevalent throughout the south than is generally realized. In regard to the former disease, the greatly improved economic conditions of recent years, with their attendant elevation of standards of living should have had some effect in modifying its incidence. As to the latter, the effort of exceptionally able sanitarians, representing federal, state and private organizations, and the expenditure of vast funds during the period of an entire generation should have resulted in approximate eradication. While some progress has been made, the facts remain that with the exception of three of the so-called "resort states" of the west, the south leads the country in mortality from tuberculosis, while hookworm disease is still prevalent in all parts of the south and among all classes of society. (Attention is invited here to the death-rates of states furnished by the National Tuberculosis Association, in which the position of the southern states is seen

with reference to the figures for the country as a whole.) In a personal communication, Prof. Stiles, the discoverer of the American hookworm, states that he is engaged in a compilation of statistics from the various states which will show their comparative rates of incidence of hookworm disease, up to the present time. (The last report of this kind was that of the International Health Board for 1924.) He says, "My conclusion is that the severe cases of hookworm disease have been very greatly reduced in the south, but the moderate and light cases, and the carriers, are still very common, and will remain so for several generations." He says further, "Some hookworm workers are advising the practitioners not to trouble themselves to treat light cases. It is needless to say that I do not concur with this point of view."

Possibly the influx of capital has been too recent to bring about the amelioration expected, or the sources from which both diseases arise are too deep and tortuous to be completely exposed. It would appear that in addition to the activities of the usual health and social agencies, there is an incalculable amount of work to be done by individual physicians in earlier recognition, more thorough treatment and more consistent "follow-up," in each instance.

RANK OF REGISTRATION STATES AS TO TUBERCULOSIS DEATH RATES
In each of the years 1923 to 1927, inclusive.

1927		1926		1925		1924		1923	
Ariz.	324.8	Ariz.	328.5	Colo.	152.4	Colo.	163.1	Colo.	168.5
Colo.	138.9	Tenn.	147.9	Cal.	142.0	Cal.	155.1	Cal.	152.5
Cal.	135.3	Colo.	144.2	Tenn.	137.5	Tenn.	147.2	Tenn.	151 4
Tenn.	134.4	Cal.	134.8	Md.	120.8	Md.	121.4	Ky.	133.5
Ky.	109.5	Ky.	122.6	Ky.	119.3	Ky.	119.6	Md.	125.0
Miss.	102.5	Md.	113.9	La.	111.1	Del.	114.4	Va.	121.0
Md.	101.7	Miss.	109.5	Va.	109.2	La.	112.7	Del.	114.1
Va.	99.6	Del.	109.2	Miss.	107.7	Va.	112.2	La.	114.1
La.	98.2	Va.	105.3	Del.	100.4	Miss.	106.4	S. C.	105.1
Del.	93.4	La.	105.0	Ala.	100.1	N. C.	101.8	Fla.	103.4
N. C.	89.0	N. C.	97.8	N. C.	99.4	S. C.	101.1	Miss.	100.2
Ala.	87.1	Ala.	94.2	S. C.	93.8	N. Y.	94.3	R. I.	100.2
S. C.	84.0	Fla.	91.1	N. Y.	92.1			N. C.	99.3
N. Y.	82.8	S. C.	91.0	Mo.	87.2			N. Y.	97.9
Fla.	81.1	N. Y.	89.8					Ind.	93.8
U. S.	*80.8*	*U. S.*	*87.1*	*U. S.*	*86.6*	*U. S.*	*90.4*	*U. S.*	*93 6*
Mo.	79.4	Mo.	84.0	Mass.	83.0	Mo.	89.9	Mo.	92.5
Ark.	76.8	N. J.	83.9	R. I.	82.9	Ga.	88.4	Ga.	91.3
Mass.	75.5	Mass.	83.5	Ind.	82.2	Fla.	86.1	Conn.	90.0
Ill.	75.3	Ind.	83.1	N. J.	80.3	N. J.	86.0	N. J.	89.7
Ind.	74.8	Vt.	80.0	Fla.	79.9	Mass.	85.6	Mass.	88.5
N. J	74.7	Pa.	77.0	Wash.	79.1	R. I.	84.9	Pa.	85.9
W. Va.	73.5	Ohio	76.8	Ill.	78.1	Ind.	84.8	Ohio	85.8
R. I.	73.3	W. Va.	76.6	Pa.	77.0	Ill.	82.0	Vt.	82.6
Ohio	70.2	Ill.	76.3	W. Va.	76.7	Ohio	81.9	Ill.	82.1
Vt.	70.1	Conn.	76.1	Ohio	74.5	Conn.	81.8	N. H.	81.1
Pa.	70.0	Wash.	73.3	Conn.	73.8	Pa.	81.8	Me.	80.7
Me.	68.3	R. I.	72.0	Vt.	71.2	Vt.	81.4	Ore.	78.5
Wash.	67.4	Me.	70.9	Mich.	66.5	Wash.	74.7	Wash.	77.6
Mich.	65.7	N. H.	70.3	N. H.	65.7	N. H.	74.2	Minn.	73.6
Conn.	65.6	Mich.	69.4	Ore.	64.9	Mich.	72.9	Mich.	71.6
N. H.	64.6	Wisc.	65.2	Me.	63.2	Ore.	71.0	Wisc.	67.0
Wisc.	61.6	Minn.	63.0	Wisc.	61.6	Mont.	69.0	Mont.	64.6
Ore.	59.6	Ore.	61.8	Minn.	60.2	Me.	68.3	Iowa	44.6
Minn.	57.2	Mont.	54.2	Mont.	58.9	Minn.	67.5	Kansas	43.6
Mont.	52.2	N. D.	45.9	N. D.	49.6	Wisc.	64.7	Utah	37.7
N. D.	49.0	Kan.	40.6	Kansas	44.8	Wyo.	48.0	Idaho	36.6
Iowa	36.0	Iowa	37.9	Iowa	42.1	Idaho	45.5	Wyo.	36.3
Idaho	35.4	Idaho	34.5	Idaho	33.9	N. D.	44.5	Neb.	34.6
Kan.	35.3	Utah	33.7	Neb.	32.6	Kan.	43.5		
Wyo.	32.0	Neb.	32.3	Wyo.	31.1	Iowa	41.6		
Neb.	29.2	Wyo.	26.3	Utah.	29.6	Utah	37.8		
Utah	27.4					Neb.	35.5		

The two diseases are considered together in this study on account of their frequent occurrence together in the same individual and because of the common experience of finding one masquerading under the diagnosis of the other. This was the observation of the late Dr. W. L. Dunn, whose practice was largerly a consulting service, with cases referred from every southern state and the islands of Cuba and Porto Rico. Curiously enough, in passing, it should be mentioned that of a fairly large group from the Caribbean, all were free from intestinal parasites.

With the expansion of the Dunn clinic from the practice of its founder and his associates, the experience cited has continued and extended further, until now it is believed that an analysis of such cases may be of interest. Of sixty-eight cases presented from the files of recent years, there were forty-three in which tuberculosis and uncinariasis were found in the same patient, and twenty-five in which the hookworm was present but there were no evidences of active tuberculosis. In the first group, in nearly every instance, the occurrence of the parasite had not been suspected, as the signs of its activity were so slight as to fail to attract attention, or were so merged with the symptoms of the pulmonary infection as to be overshadowed by the latter. The discovery was incidental to the practice of routinely examining the stools of every new patient. However, in a few cases, after some study, it was difficult to determine which process had priority, or which was responsible for the clinical picture. In the second group the diagnosis of tuberculosis had been made by the majority of the referring physicians. Superficially, this was natural on account of the presence of such symptoms as progressive loss of weight and strength, anemia, digestive disturbances, even fever, dyspnea and cough. Of course, thorough physical examination, stereoscopic X-ray films, repeated sputum analyses, and possibly tuberculin tests, made elimination comparatively easy.

Taking the members of the two groups together, from the standpoint of their all being carriers of the hookworm, it is noteworthy that they are not representative of the poor or ignorant but rather of the comfortably situated middle class, with some examples of superior intelligence. This is indicated by a review of their occupations and social status, which also seems to offset the idea of several writers that uncinariasis should be regarded chiefly as an occupational disease. Thus, there were twenty-two students, nine of grade schools, nine of high schools, one of a fashionable boarding school and three of colleges; there was one high school teacher, and two grade school teachers, two graduate trained nurses of exceptional qualifications, two "ladies" in the old sense of a woman of position (college graduates), one owner of a large textile mill, one retail clothier, one undertaker, one newspaper man, one interior decorator, one traveling salesman, one captain of a U. S. hydraulic dredge, one postmaster, one stationary engineer, two telegraphers, one telephone operator, one brakeman, one railroad car repairman, one flagman, one auto mechanic, one sailor, three clerks, two bookkeepers, one stenographer, one beauty expert, two barbers, one filling station attendant, one knitting mill operative, one of no occupation, six housewives, and only two farmers and two laborers! The distribution by states is as follows:

North Carolina 27; Florida 14; Tennessee 11; Georgia 7; Alabama 3; Kentucky 2; West Virginia 2; Indiana 1, and Ohio 1, the last three being above the zone to which the disease is supposed to be confined. As the usual statistical reports give the ratio of urban to rural cases, it was noted that in this series there were twenty-seven from cities of forty thousand population or more, while many of the forty-one remaining were from communities of ten thousand or over. Of the larger places there was one from Atlanta, there were two from Birmingham, two from Jacksonville, three from Knoxville, two from Tampa and one from Huntington. The females outnumbered the males thirty-eight to thirty. Ages ranged from eight to fifty-four, but there were only four over forty, and seven in their thirties, which corresponds to records from other sources which show that infestation is most common in childhood and becomes much less frequent after the barefoot period.

Anemia was general, but more marked in the group in which tubercle bacilli were found in the sputum. It consisted, usually, of a low hemoglobin percentage rather than a low erythrocyte count. The average eosinophile estimation was 7.5 per cent. There was one of 44% in a mill owner, fifty-four years old, whose stools swarmed with larvae and ova. There was one of 28% and another of 24%. There were nine cases with a percentage of 3 or less. After treatment the eosinophiles decreased fifty per cent within two weeks or a month, and were found to be normal three months later. The anemia improved more slowly.

The technique of stool examination is extremely simple. In our laboratory it is that of Stitt—the emulsification in two drops of water on a glass slide of as much feces as may be picked up on the flat end of a toothpick, using a two-thirds inch objective, and a one inch ocular, without cover glass. If the characteristic oval, thin-shelled eggs, thirty-eight by sixty microns, with clear zones, separating the segmented, granular, central portion from the shell, are not seen, the centrifuge is used with the method of Bass. This consists of adding water to the specimen and shaking until it is diluted about ten times and forms a good suspension, it is then strained through gauze into a centrifuge tube, spun not more than eight seconds (to avoid disintegration) and the sediment examined on a slide after pouring off the supernatant fluid. We have been fortunate in having, for the past eight years, the services of a technician, Mr. Max Riesenberg, who has had a remarkable experience in intestinal parasitology, with the Philippines as a background. A few months ago, in the routine performance of the technique described he found the ova of trichuris trichuria (trichocephalus dispar) or whipworm, in a specimen submitted by a lady of thirty-six, from Florida, who had had active pulmonary tuberculosis seven years before. She was referred to the Clinic on account of weakness, fatigue, nervousness, flatulence, and a vague aching throughout the chest, relieved at times by belching. Physical examination revealed no adventitious sounds in the chest, which was resonant throughout, although there was a little modified breathing in one small area; the X-ray showed such evidences of an old, healed lesion as heavy hilar shadows and very dense, evidently calcareous nodes; the sputum was negative; so was the Wassermann; the urine was normal; the hemoglobin was 68%, the red

cells 3,948,000; the white 13,400; eosinophiles 4%. After elimination of the parasite the patient regained her strength, recovered from her nervousness, digestive disturbances and the few pulmonary symptoms which had made her apprehensive. Upon discharge her hemoglobin was 77%, her erythrocytes 4,528,000, and leukocytes 10,000. The treatment in this case consisted in the administration of iron sulphate in the dose of 0.320 gm p. c. and H. S. with a saline before breakfast every other morning. The results were so prompt and thorough, and free from the usual unpleasant and at times dangerous features of most vermifuges that it was decided to adopt the method for all subsequent cases of hookworm disease. Since then we have had four cases of the latter treated with equal success, to the envy and regret of other patients still on the cure who have vivid memories of the starvation-saline-thymol procedure, which, in some instances, proved almost too severe for advanced cases of tuberculosis.

The use of ferric sulphate originated in the practice of the senior author soon after graduation, in the early nineties. In Southern Michigan he saw the mother of four young children administer a dose of medicine for worms. Upon inquiry as to the nature of the remedy she said "It's copperas, and it works." He adopted it empirically, as there was nothing on the subject in the literature of therapeutics, and found that the woman was correct. It has proved a reliable agency for ridding the intestinal tract of ascaris lumbricoides, and other worms throughout an experience of nearly forty years. As yet there appear to be no references to the sulphate of iron as a vermifuge.

It may be profitable, from a diagnostic standpoint, to analyze a little more closely the records of some of the cases in which tuberculosis was suspected but not found, but in all of which hookworm was present.

Case 8613. Symptoms for which patient was referred: Dyspnea, nervousness and hysteria; pain in chest upon deep breathing; slight elevation of temperature and loss of twenty pounds. Blood pressure was 90 systolic; 60 diastolic. After treatment all of the above symptoms disappeared, weight was regained and blood pressure improved.

Case 5459. Symptoms for which referred: Pain in chest, slight expectoration, and loss of nine pounds. Larvae, as well as ova, were found in stools. Perfect recovery.

Case 3037. Symptoms: Cough and expectoration; loss of three pounds. Perfect recovery.

Case 7627. Symptoms: Fatigue, night sweats, temperature 99; some expectoration but no cough; slight chest pain at times; sour stomach and flatulence. Was admitted to a state sanatorium in 1923, where she remained ten months, then she came to Asheville where she was in a local sanatorium for four months, after which she changed to another local sanatorium where she was seen in January 1927, after she had been in bed for four years. While one of her complaints was a loss of twenty pounds in two years, at the beginning of her illness; when she was examined she was decidedly over weight and had a blood pressure of 150 systolic and 84 diastolic. She was thirty-five years old; had been married five years; no children. Physical examination by Dr. Dunn, which was done before the X-ray and laboratory reports were sub-

mitted to him, resulted in the remark: "Never tuberculous. Suspect hookworm." All of the laboratory findings bore this out, and after treatment by thymol the patient was discharged perfectly well and has remained so from reports received since her return home.

It is worth while to note that in this instance a fairly intelligent woman was confined to bed for four years and the diagnosis of tuberculosis was made by her family physician, the physician of a state sanatorium, and one or two other physicians who specialize in pulmonary diseases. She lost four years of the best time of her life in a purely vegetative existence, at an expense which was a considerable economic strain for her husband.

Case 7216. Symptoms: Nervousness; dizziness for three years; indigestion; flatulence; pain at angle of scapula when flatulence was present; tired in the summer, but better in winter. Examined nine months previously in Indiana, pronounced tuberculous and advised to come to Asheville.

Patient says she has cleared her throat and expectorated since her earliest recollection. Her indigestion was sufficient to cause dyspnea, with rapid pulse. Patient was found to have chronic inflammation of the naso-pharynx, also a cervical rib. Dr. Dunn's remarks on the X-ray were: "Peculiar findings. Not suggestive of tuberculosis. May be related to sinus or hookworm. Treat both." Recovery.

Case 8001. Symptoms: Patient has been tired between shoulder blades for two or three years; has had a dull ache in the chest anteriorly, with a cough, off and on, for eighteen months, with expectoration which was streaked with blood once or twice when she had a cold. Temperature had been 100 two or three times lately; there have been swollen cervical glands and dyspnea on exertion. She has lost nine pounds. Dr. Dunn's remarks on the X-ray were: "Few fine lines to pleura, posteriorly. Suggestive of hookworm." Condition cleared up on appropriate treatment.

Case 3789. Patient had severe cold one month ago; cough and expectoration since. Referring physician said she had rough breathing both sides and suspected tuberculous involvement. Blood pressure 100 over 60. Injection of 0.3 tuberculin was negative. Intradermal was plus, minus. Hookworm positive. Treatment resulted in recovery.

Case 3872. Symptoms: Pain over precordium. Referring physician thought it intestinal disorder. Cough and expectoration at times with cold. Note on chart: "No evidence of tuberculosis or heart disease." Recovered with treatment.

Case 8289. Complaint: Pink sputum at intervals for twenty years, hawked up—no cough; frequent coryza; dyspnea on moderate exertion; indigestion suggesting appendicitis; constipation; easily fatigued all life. Blood pressure 164 systolic; 112 diastolic. Remarks: "No active tuberculosis; uncinariasis, sinusitis and ethmoiditis." Cleared up under appropriate treatment.

Case 7840. Complaint: Cough and hoarseness. Referring physician heard "rattling noise in right lung." Blood pressure 100 systolic; 70 diastolic. Lost twenty pounds. Notes on X-ray: "Slight lines significant. No tuberculosis." Thymol; recovery.

Case 8100. Coughed since pneumonia three years ago. Appendectomy one year ago. Loss of strength; loss of appetite. Complains of nausea and vomiting. Temperature 99. Had been given tuberculin with result that patient became ill, nervous and weak, with a dull pain in the left chest. There were also night-sweats; epigastric pain and flatulence. Referring physician said patient had trouble in both upper lobes. X-ray showed tuberculosis not evident—bronchiectasis. Treated for uncinariasis. Later examination note: "Well—discharged."

Case 2996. Patient had lost ten pounds; is weak; tired; lacks energy; has dyspnea and depression, most marked two hours after breakfast. Heart is rapid in the morning. Remarks: "No evidence of tuberculosis. Hookworm." Cured.

Case 5544. Complaint: Bilious flatulence; heavy head; coated tongue, relieved by salts; poor appetite; constipation. Has been on diet for twelve months. Has taken C. C. pills, liver pills, salts, oil, cascara, and had operation for appendicitis. Has fatigue, dyspnea and night sweats. Sputum and Wassermann were negative. Notes on X-ray: "Both apices hazy. Significant." Sent home to be treated for hookworm by family physician.

Case 6857. Complaint: Fatigue for two years, with dizziness. Frequent colds. Pain in epigastrium and cardiac region, at times "scattered over chest." Headaches in increasing severity; one night-sweat last week. Dyspnea on exertion. Temperature elevated. Constipation and flatulence. Lost twenty-one pounds. Note: "No evidence active tuberculosis. Migration of larva may have made signs. Treat hookworm."

Case 7663. Patient lost five pounds and has had slight expectoration for a month. X-ray and diagnosis by family physician "serious condition." Patient has poor appetite; is very nervous. Notes on X-ray: "Right upper. How much due to hookworm?" Discharged "Normal."

Case 5391. Temperature 100 in the afternoon at times. Had double pneumonia one year ago. Pain in chest. Lost fifty-four pounds since. Patient has applied for admission at State Sanatorium. Note: "Bad tonsils and hookworm. No active tuberculosis. Treat hookworm then application to sanatorium not necessary." This turned out to be the case.

Case 4061. Complaint: Substernal and interscapular pain. Temperature 99 in the afternoon. Note: "No evidence of tuberculosis."

As further complications, two cases of syphilis were found in the series; one of malaria, and one of bronchiectasis. These received the necessary additional treatment.

There are several references in Dr. Dunn's notes to "fine, interlacing lines" in the X-ray, which, in his opinion, were significant of the presence of hookworm. Such appearances may be the result of a reaction to irritation by the larvae in their passage from the pulmonary capillaries to the alveoli, and bronchi, prior to being swallowed (as described by Loos, Dock and Bass, Stitt, Chandler and others). It is a rather fine point, representing one of those almost intuitive impressions which come after many years of experience. It is of value, as part of the general picture, and as a differential feature in connection with the earliest X-ray evidence of the extension of the tuberculosis process into the lung

tissue. Such refinement, however, is not essential for the majority of us in the absence of other signs of infection, the presence of a low color index, eosinophilia and the ease with which the ova of the parasite may be detected in the stools.

In one of his farewell addresses before leaving this country for England, Osler advised his audience of physicians and students to provide themselves with three important adjuncts to the successful practice of medicine—a library, a laboratory and a nursery. In many instances the maintenance of the nursery may have made serious inroads upon the upkeep of the library and the laboratory, but an ordinary, old-fashioned microscope soon pays for itself in the routine examinations of urine and feces, and should be an essential piece of equipment in the office of every practitioner in the south. When the examination of stools becomes a general procedure, much diagnostic confusion will be avoided, patients will be saved considerable time, expense and worry, and with prompt treatment of all infestations, a real advance will be made toward the eradication of uncinariasis—a menace to the progress of a large and potentially productive section of this country.

SUMMARY AND CONCLUSIONS

1. With the exception of three "resort states," in which high rates are due to imported cases, there is more tuberculosis in the south than in any other section of the United States.

2. Hookworm disease is also widely prevalent, in spite of two decades of organized effort toward eradication.

3. Sixty-eight cases are presented, in forty-three of which both diseases were present, while there were twenty-five cases of uncinariasis which had been referred with a diagnosis of tuberculosis.

4. The technique of stool examination is extremely simple and should be a routine procedure of every general practitioner, at least in the south.

5. The administration of ferric sulphate is efficient as a vermifuge for hookworms, whip-worms and round-worms, and is safe and free from discomfort in the treatment of weak and emaciated individuals.

Dr. L. B. McBrayer, Southern Pines:

I want to congratulate Dr. Colby and thank him for this paper. There seems to have been, up until a few years ago, in most of the state sanitoria that I have visited, an idea that a person who was supposed to have tuberculosis could not possibly have anything else in the world the matter with him. The idea never obtained in Dr. Dunn's and Dr. Colby's work at any time, and a great many other private practitioners doing tuberculosis work followed the only sane and sensible procedure.

At the State Sanatorium a few years ago, before Dr. Williams and Dr. Bittenger came there, there was a similar case, except that the patient was markedly emaciated and had the general facies of advanced tuberculosis. But the patient did not have tuberculosis at all and with proper examination was found to have uncinariasis; a little treatment completely relieved him. He was sent home as soon as he was able to be up and walk around and his physician advised as to the facts in the case. This gets back to the fact that I think is recognized by all good men

doing tuberculosis work—that a complete and thorough examination, and everything that goes with it, is very necessary in tuberculosis. In Dr. Colby's cases there was mixed infection in a number of the cases, and if left alone the uncinariasis would probably have kept the patient from getting well of the tuberculosis and might have led to the death of the patient.

You will probably agree with me that this thorough examination should not be confined to the patient who has tuberculosis, but that every patient should have the benefit of it. And it is very fine to have such records as Dr. Colby has and to be able to refer to them and bring out such points as Dr. Colby has.

ADMINISTRATION OF TOXIN-ANTITOXIN

Dr. C. A. Shore, Raleigh

At this time and to this body it is not necessary to make any plea as to the advisability of immunizing children against diphtheria. It is, I believe, fully established that such immunization is practicable and desirable.

While the therapeutic value of diphtheria antitoxin continues to be one of the chief of medical miracles, the incidence of the disease of diphtheria had remained practically stationary for many years, or until it was discovered that an artificial, but more or less permanent active immunity could be secured by the sub-cutaneous injections of minute doses of diphtheria toxin.

To some of us this discovery came as a surprise because it was, at one time, a common belief that natural immunity to diphtheria was nearly always temporary in character. It was believed, in fact that those persons who had recovered from one attack of diphtheria were especially susceptible to subsequent infection. This belief seemed to contradict the theory on which the efforts to produce an artificial active immunity were based, but it is now generally accepted that there is no contradiction. It is clear that the numerous instances of repeated susceptibility to diphtheria infection occurred in those individuals whose body cells lacked the natural ability to manufacture the protective antitoxin.

It is also now recognized that an injection of a therapeutic dose of antitoxin given early in the infection—and that is, of course, when it should be given,—may have the one disadvantage of preventing a natural active immunity, and this is because the toxin may be destroyed before it has had time to induce the body to manufacture its own antitoxin.

It is now, as I have already said, generally recognized that it is practicable and desirable to produce an active artificial immunity in children by injection of diphtheria toxin, but there is still some discussion as to the best and most desirable form in which this toxin should be administered. Various preparations of toxin have been advocated and some of them have now been tried on hundreds of thousands of persons and at the present time there are three or four preparations in wide use and each of them in practice produces a satisfactory immunity and each has its ardent advocates. It is unquestionably desirable to find out which is the best preparation and to eliminate the others, but as

between toxin-antitoxin and toxoid it is not yet quite clear which is the more satisfactory. The final decision must be postponed for further testing. Fortunately it does not appear to be an urgent matter because satisfactory immunity may be established by either and the disadvantages appear to be of no vital importance.

The problem has been, first, of course, to get the proper dosage, and second, to so safeguard this dosage of the deadly diphtheria toxin, that its injection will be safe and innocuous. This may be done by combining the toxin with antitoxin so that only an extremely minute amount of free toxin remains, or the same result may be accomplished by destroying the toxicity by means of heat or chemicals.

The chief advocate of this latter method has been Ramon in France, and he has called his preparation Anatoxin. A somewhat similar preparation in use chiefly in England and Canada is called Toxoid. Absolute detoxication is not claimed for the toxoid, but this condition is approximate. The toxin-antitoxin mixture is the one chiefly used in this country and also in Germany and Australia. It was first used by Dr. Park of the New York City Laboratory and it is in that city that the largest and most complete records have been kept. Almost two million children have now been immunized in the region of New York City and there has not been a single fatality, nor serious complication in all this number.

The danger from freezing does not now exist, since the amount of toxin is now so small in each dose. As first prepared the dosage of toxin was one M. L. D. in each cubic centimetre but for some years the amount of free toxin injected is only one-tenth of that amount, and it has been found that such dosage is quite sufficient. The serum in each dose is also extremely minute, it is only about 1/2000 of amount in one cc of normal horse serum.

When we compare the relative merits of toxin-antitoxin and toxoid it seems to be established that immunity is probably more rapidly established with the former. It is also claimed by some that the toxoid gives at first a definite negative phase. That is, that susceptibility is actually increased immediately after the first injection. The percentage of reactions from the injection except for very young infants is considerably higher from toxoid than from Toxin-Antitoxin. On the other hand in infants under eighteen months reactions from the toxoid are extremely rare; even more rare than from injection of toxin-antitoxin. The actual immunizing value of the toxoid is also not quite so certain, but there have been some recent improvements in the toxoid preparations, so that, in Dr. Park's opinion at least, the toxoid will probably soon be as efficient as the toxin-antitoxin.

When we consider the toxin-antitoxin we find that the chief criticism is the belief that the three injections of the mixture will produce a sensitization to horse serum, if a horse serum antitoxin has been used in the preparation. If this claim can be sustained, it is an important objection because the horse is used in the preparation of so many antitoxins and almost every person receives, sooner or later an injection of horse serum. The claim that the toxin-antitoxin injections were capable of producing sensitization was first made by Hooker of Boston, who

experimented with Park's original mixture,—that is, a mixture which contained ten times as much serum as the mixture now universally used. In addition to the three injections of toxin-antitoxin Hooker also made a preliminary intra-cutaneous injection of serum. This was done so that the resulting skin reaction could be compared with that produced after the three injections of toxin-antitoxin. The results undoubtedly differ in considerable degree from those which would have been obtained from the injection of three doses of the toxin-antitoxin now used. What he did show was that the three injections of toxin-antitoxin plus a preliminary injection of serum did cause a slight increase in a skin sensitization to horse serum. Hooker's experiments have been repeated by others; Park, for one, whose conclusions, it seems to me, must be accepted. Park admits that slight skin sensitizations may be induced by three injections of toxin-antitoxin, but he has never seen a single case of serious sensitization which can be charged to toxin-antitoxin.

The publication of Hooker's results led many persons to fear the use of toxin-antitoxin and during the last few years almost all severe serum reactions have been charged to a previous injection of toxin-antitoxin. A striking instance was that reported in The Journal A. M. A. (Gatewood and Baldridge, Iowa 4/2/27) of a severe necrosis in the thigh and the caption of the article was "Tissue Hypersensitiveness Following the Administration of toxin-antitoxin." This patient had been given the Schick test with a negative result. In spite of this she received three injections of toxin-antitoxin in February 1925. In November she had an acute infection involving the sinuses of the head. Culture showed diphtheria-like organisms and she was given 20,000 units of diphtheria antitoxin on November 27. There was no immediate reaction, but six days later mild symptoms of serum sickness developed. The infection continued with undiminished severity and eight days after the injection of the 20,000 units an injection of 40,000 units of diphtheria antitoxin was made and this was followed by local and general symptoms and necrosis of tissues at the sight of the injection.

It may be commented first that the patient probably did not have diphtheria—she had had a negative Schick, then three injections of toxin-antitoxin. The infection in the nasal sinuses did not improve during the eight days following the injection of 20,000 units of diphtheria antitoxin. The dose of 40,000 units was given eight days after the previous injection of 20,000. If the toxin-antitoxin had sensitized the patient a reaction from the first injection of serum would certainly have occurred, but when it did occur after the second injection it is only reasonable to assume that the severe reaction was due to the sensitizing effect of the first dose of serum eight days before.

Duke of Kansas City, the well known authority on hay-fever and other manifestations of Allergy, states that he does not think it possible to sensitize a person who does not have allergic hereditary by either small or large doses of serum. Or at least, that a mild skin sensitization is a matter of no particular importance. On the other hand he believes that injections of serums or vaccines should not be given lightly or carelessly to any person of hereditary allergic strain, whether he be a subject to hay-fever or not.

It seems to me that this would be a good rule to follow by all public health officers and private practitioners as well. First eliminate all hay-fever cases and all children with allergic heredity, and then the rest may be given safely the diphtheria vaccine, whether you choose to use the toxoid or the toxin-antitoxin made either with horse or goat serum antitoxins.

Dr. Park and his associates at present use the goat serum preparation exclusively, but Dr. Park frankly states that the change was made from expediency only—that is, not because he thought that the horse serum preparation would cause sensitization, but because he wished to avoid possibility of any criticism which might prevent children from being immunized. In our own State Laboratory we distribute both the horse serum and goat serum preparations. It is my own observation based however, on a limited number of personal observations, that the goat serum preparations cause an appreciably larger percentage of febrile reactions. Others differ with me and a larger series of observations might convince me that I am mistaken. I believe that it is yet to be decided which of the two preparations toxoid or toxin-antitoxin is the preferable, but I do think that we may rest assured that the advantages of one or the other will prove to be very slight indeed.

Although the title of my paper is the administration of toxin-antitoxin, I would like to add a few words on the subject of serum reactions in general.

It is well known that many of the laboratory animals used in experimentation may be sensitized with ease, so that minute quantities of the sensitizing substance will cause immediate collapse and death. Other animals, such as monkeys cannot be made anaphylactic—at least in any appreciable degree. Man fortunately resembles the monkey in this respect, although of course, no deliberate attempts have ever been made to create an anyphylactic condition in man.

There is, however, a high degree of natural sensitization which exists in certain persons. This natural sensitization is not highly specific—that is, it is usually multiple and such persons are sensitive to a variety of substances. This phenomenon is familiar and hereditary and is evidenced in the familiar observation that susceptibility to hay-fever runs in families. All of the fatal and extremely serious reactions apparently occur in this class. Almost without exception sudden deaths following serum injections have occurred with the first injection. That is in persons who are naturally anaphylactic.

I may digress sufficiently to refer here to recently discovered methods for the control of shock following hypodermic medication. A description of these methods may be found in a recent number of the Journal A. M. A. In brief it was found that shock from injection of pollen extract could be prevented or controlled by the addition of small amounts of Epinephrin and Ephridrine, combined with the use of a tourniquet to control venous return. It is possible that these measures may also permit the safe injection of serum into those suspected of being naturally anyphylactic to horse or other serum, but so far as I know it has not yet been tried.

In closing I wish again to emphasize the importance of attempting

to get a history of hay-fever or other allergy and to eliminate the suspected children from any general scheme of immunization. If immunization is attempted later it should be done with full knowledge of the possibilities involved. It is true that in many of these cases the danger is slight, but the deviation from the normal is so great that the result of any hypodermic, and especially intravenous injection, can not be predicted.

THE PHYSIOLOGICAL RESPONSE TO DORSAL SYMPATHECTOMY IN RAYNAUD'S DISEASE

R. B. McKnight, M.D., F.A.C.S., Charlotte, N. C.

The term Raynaud's disease doubtless includes a group of affections of the distal arteries of the extremities characterized roughly by a spastic type of vasomotor disturbance. Adson and Brown separate these cases into four groups, each tending to merge into the other.

(1) Those persons having a "vasomotor constitution"—so classified by Mueller. They are usually women of the asthenic type who have cold hands and feet; moist, clammy and cold extremities and who suffer readily from cold. These individuals certainly have subnormal vasomotor mechanisms, and in all probability constitute quite a large group.

(2) Those persons showing more advanced symptoms with marked color changes, frequently paroxysmal in nature, and occurring with lesser degrees of lower temperature; more or less chronic state of cyanosis may persist for months; there may be extreme coldness and dull aching pains in the affected parts; in warm environments the hands may be quite red and the patient complain of burning sensations.

(3) This group has still further aggravation of disturbances; a condition of chronic cyanosis with difficulty in temporary recovery; the hands or feet (or both) may become puffed and swollen; there may be symmetric distribution of trophic disturbances such as small areas of gangrene of the finger tips.

(4) This group comprises the severest and rarest cases; gangrene may develop in the entire end of symmetric fingers with a short history of previous vasomotor disturbance; pain is frequently quite marked. It is this group which I referred to in a recent paper as presenting the picture of a typical case of Raynaud's disease which most of us, perhaps, have in mind. I certainly did, until I began a more careful study of this interesting condition.

Adson and Brown believe that there is an overexcitability of the cerebrospinal vasomotor centers, and that agents acting on the periphery, such as cold on the skin, produce stimulation and overacting of these centers. Lewis makes the statement, after long study in a series of cases: "For the present it is possible to say that there is a disease in which the condition of the digital arteries is peculiar, displaying itself in a direct reaction of these vessels to relatively low temperatures with the production of spasm (complete spasm with periods of full relaxation to a normal state or complete spasm with intervals of incomplete relaxation), a spasm that, according to its degree and duration, is accompanied by discoloration of the digits and by nutritional changes in them."

He believes that the underlying physiological disturbance is peripheral and not central, and claims that Adson and Brown are perhaps influenced by the generally accepted hypothesis of Raynaud that the spasm of the peripheral vessels is primarily due to nervous impulses. As a matter of fact, Lewis presents some striking experimental data to support his claim. My knowledge of this condition is by no means as broad as that of these men, but, for the present anyhow, I am compelled to accept the idea of central disturbances.

Just a word about the diagnosis. I wish to stress the point that a diagnosis of Raynaud's disease by no means rests alone on color changes of the extremities. Thrombo-angiitis obliterans, arteriosclerotic disease, erythromelalgia, diabetes, vasomotor upsets following febrile and debilitating diseases and other conditions are to be ruled out. (1) Predilection for the female sex, (2) vasomotor manifestations characterized by color changes, symmetrical distribution and frequently aching or pain, and, (3) the presence of pulsations in the arteries of the hands and feet, should certainly lead one to be more than suspicious of Raynaud's disease.

Briefly stated, the treatment consists in surgical interference in the vasomotor paths supplying the affected areas. This is accomplished by removal of the upper thoracic sympathetic ganglia, or the lumber sympathetic ganglia, as the case may be, with their intervening trunks, and divisions of the gray rami. This procedure interrupts the continuity of the vasoconstricting fibres, thereby allowing vasodilation of the affected parts. Dilation of the vessels of the extremities at once takes place since these fibres are allowed full play, the efferent vasoconstricting impulses being broken.

Recently I have operated on two cases of Raynaud's disease affecting the hands with results strikingly phenomenal. Several other cases have come under my observation, each group according to the classification above, being represented. On two of these cases I plan to perform sympathectomy at a later date. I wish to report one of these operated cases in some detail and discuss briefly the physiological response.

Case Report

A young white single woman, 28, a teacher, was referred to me the 25th of last October, complaining of coldness, bluish discoloration, contraction and severe pain in the fingers of both hands. She stated that her mother had had the same condition, although less severe, and had died of cardio-renal disease. She had always enjoyed good health except for a nervous breakdown two years ago. Her tonsils were removed eight years ago. Menses began at 13 and have been regular and normal until the last few periods when they came every two weeks.

The first symptom she noticed was ten years ago when the hands would become unusually cold on exposure to lowered temperatures. She has always been interested in music, especially the piano, and on occasions of these attacks she could not play the instrument on account of the stiffness of her fingers. Three years ago the fingers began to get blue and very cold. The attacks would always affect the same finger or fingers of each hand and would last for varying lengths of time. She

was told it was "chilblains," and on another occasion "just nervousness." For the past two years pain of a dull aching type has been so severe that she frequently loses sleep. Small gangrenous areas have appeared on the tips of the fingers. The fingers have become contracted so that she cannot (except at intervals) extend them. The nails of the index and middle fingers have gradually and progressively curved forward until they extend over the tips of the fingers. (I have observed another case with an identical phenomenon.) She has no other complaints and stated that at present she was not especially nervous.

Examination revealed a rather slender young woman weighing about 110 pounds. Her blood pressure was 150/98, pulse 108, and temperature 98.2 at 4:30 p.m. The tonsils had been cleanly removed; there was definite peridental infection; thyroid was not enlarged or adenomatous; the lungs were clear; the heart sounds were a little rapid, but regular; no murmurs; there was slight accentuation of the aortic second sound; abdomen was entirely negative; pelvic examination was not done on account of an intact hymen, but rectally it was negative; reflexes were possibly a bit exaggerated, but otherwise not abnormal; the hands were quite cold and bluish, especially the fingers. She could not voluntarily extend the fingers beyond 45 degrees, but I had no difficulty in extending them fully; from the thenar eminences upward the forearms were normally warm; there was certainly some anesthesia of the skin covering the fingers; trophic changes were observed in the fingers, which consisted of small areas of gangrene near the tips and forward curving of the nails of the index and middle fingers (if such is to be considered as trophic changes). The feet were cold but showed no color changes or other evidence of vasomotor disturbances. All palpable arteries pulsated normally. The urine was negative except for a trace of albumin. Blood count showed 85 per cent hemoglobin, 4,700,000 red cells, 10,400 white cells with 29 per cent lymphocytes, 70 per cent polymorphonuclears and 1 per cent eosinophiles. The blood Wassermann was negative and the blood sugar 0.09 per cent.

On further examination I could not get the hands and fingers to blanch on exposure to low temperatures. They would become more cyanotic on exposure to cold and redden on exposure to increased temperatures. During the several days observation before operation her hands were never warm.

Operation was performed by me the second of November under nitrous oxide-ether anesthesia. The technic followed was approximately that described by Adson. A mid-line incision was made from the tip of the sixth cervical spinous process to that of the fourth thoracic. The fascia covering the trapezius muscle was incised on the left. Blunt dissection through the spinous attachments of the trapezius, rhomboids and serratus posterior, then through the erector spinae mass, exposed the transverse process of the second thoracic vertebrae. The second rib was exposed for a distance of about one and a half inches. All tendinous attachments were cut and the rib resected for a distance of about an inch laterally. The transverse process was cut as close to the lamina and body of the vertebrae as possible. The pleura which was exceedingly thin was retracted anteriorly and laterally. After considerable

search the sympathetic chain was located. The second thoracic and cervicothoracic ganglia were identified and resected together with the intervening trunk after cutting all communicating rami. The muscle mass was closed in tiers, approximating them in as near anatomical position as possible. The same procedure was carried out on the right side. The pleura was thicker and lower than on the left. The subcutaneous tissues were closed with interrupted catgut sutures and the skin approximated with dermal.

Postoperative reaction was normal and healing uneventful except for slight separation of the skin edges. She was dismissed from the hospital the thirteenth day postoperative.

Results

Immediately after operation the hands were dry, warm and of a normal pink color. Soon there was definite improvement in the gangrenous areas and in a month's time these areas had disappeared. Photographs show the appearance of the dorsal and palmar surfaces of the hands and fingers both before and seven days after operation. A conscientious attempt was made by the photographer to secure the same exposure and the same amount of light, and I think one can see the marked change following interruption of the vasoconstrictor impulses. Six months after operation the hands appear approximately normal. They are still a little cold, but nothing like their former temperature. There is no cyanosis and she has full use of her fingers, can play the piano, and has resumed her occupation as a school teacher. A definite Horner's syndrome is present as is to be expected. This is evidenced by a definite narrowing of the palpebral fissures. This gives her little or no trouble and is showing some improvement. I anticipate no other untoward symptoms.

This case comes under group three referred to above. A subsequent case coming under group four has secured an almost unbelievable result. This latter case will be reported in the near future in a paper dealing with these vasomotor disturbances as a whole. The physiologic response to interruption in the vasoconstricting paths constitutes a striking and apparently maintained therapeutic effect. The action is quick and sure, provided, of course, the proper structures are isolated, identified and properly divided. To quote Adson and Brown again: "The effects of dorsal and lumbar sympathetic ganglionectomy in Raynaud's disease seem to warrant the belief that surgical control of this disease is an accomplished fact."

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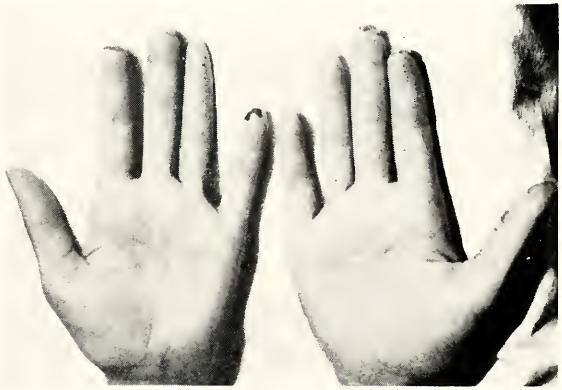
Before Operation



After Operation

Before Operation

After Operation

POST-OPERATIVE PULMONARY ATELECTASIS

Julian A. Moore, M.D., M.M.S., Asheville, N. C.

LEGENDS*

Figure I. Portable roentgenogram illustrating a right lobar atelectasis that occurred 36 hours after an appendectomy under nitrous oxid-oxygen anesthesia. Note density of the right lower lung field, obscuration of right leaf of diaphragm and shift of the heart to the right.

Figure II. Portable roentgenogram taken 36 hours after rupture of a paravertebral abscess into a bronchus. This illustrates a case of massive atelectasis of the left lung. Note collapse of the ribs, density of the whole left lung, clear costophrenic sinus, obscuration of the left leaf of the diaphragm, and shift of the mediastinum to the left.

Figure III. Portable roentgenogram of same patient as Fig. II taken immediately after bronchoscopic drainage. Note return of the heart to a more normal position and the partial areation of the left lung that followed removal of the bronchial obstruction.

The fact that pulmonary atelectasis is a frequent post-operative complication and that it bears an etiological relatonship to other pulmonary lesions occurring after operations makes its prevention, prompt recognition and proper treatment factors of importance in reducing operative mortality. Scott (1) has estimated that three per cent of operated patients develop pulmonary complications and that one in two hundred die from a pulmonary lesion.

In 1853 W. T. Gairdner (2) of Edinburgh vividly described the clinical and pathologic picture of atelectasis occurring as a complication of bronchitis in debilitated children and in the aged. He credits Duges with the first description of congenital atelectasis in 1821, and he states that Fuchs, Legendre and Bailly, Laennec and others had described a form of lobular pneumonia that was not inflammatory in origin and which they differentiated from congenital atelectasis.

Atelectasis due to obstruction of a bronchus by a foreign body has long been known. In fact, Traube (3) in 1842, Mendelsohn (3) in 1844, and Lichtheimn (3) in 1879 produced atelectasis in animals by obstructing a bronchus. William Pasteur in 1890 reported numerous cases during a diphtheria epidemic and ascribed it to diaphiagmatic paralysis. He was also the first to recognize and describe collapse of the lung as a post-operative complication. In 1908 he reported several cases and clearly differentiated it from lobar pneumonia.

Collapse of the lung may happen after any form of anaesthesia, any operation, and after wounds of the chest, abdomen, pelvis and extremities. However, it is probably more frequent after abdominal operations. In recent years much has been written about the subject and many cases of it have been reported. Last September before the Michigan State Medical Society I reported eleven cases that occurred in the University Hospital, Ann Harbor, between July 1, 1928, and September 1, 1929. Of these two occurred after abdominal sympathectomy, one

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after phrenicectomy, one after lipiodol injection into the tracheo-bronchial tree, and one after rupture of a paravertebral abscess into a bronchus. At that time the occurrence of atelectasis in these particular circumstances was new to the literature.

Post-operative atelectasis or collapse of the lung occurs in its most striking form as a massive collapse, which may be defined as a total deflation of a large area of lung tissue occurring a few days after operation. It is of sudden onset, is accompanied by alarming symptoms, and its unique features are the physical signs of a consolidated lung plus a displacement of the heart to the affected side. It may involve any lobe or the whole of one lung. It involves most frequently the right lower lobe .

The symptoms are a sudden rise in temperature (101°-104° F.), a rapid pulse, dyspnoea, cyanosis, profuse sweating, pain in the lower chest, cough productive of a thick tenacious sputum, and which the patient voluntarily inhibits. The signs are characteristic. The patient lies on the affected side. He sweats profusely, and is dyspneic and cyanotic. The affected side is immobile and retracted and the interspaces are narrowed. Tactile fremitus is usually diminished but may be increased. There is dullness over the affected area and a high immobile diaphragm. Breath sounds are usually diminished or absent, though they may be bronchial in character, and they are apt to vary from time to time. Fine and coarse rales may or may not be present. Voice sounds are usually diminished or absent, though they may be increased or changed in character. The pathognomonic sign is displacement of the heart to the affected side. This displacement may be extreme. The opposite lung gives signs of compensatory emphysema.

Roentgen ray findings are diagnostic. The involved area is more dense than the surrounding lung; the heart and mediastinum are displaced to the affected side; the diaphragm is high and there is absence of its respiratory excursion; the costo phrenic sinus is clear.

Bowen (4) observed under the fleuroscope a sort of flutter of the mediastinal contents with inspiration and expiration and states that it is characteristic of atelectasis and is not seen in any other condition.

Such a massive collapse is easily recognized but may be confused with pleural effusion, pneumothorax, lobar pneumonia or pulmonary infarction. The displacement of the heart to the affected side absolutely distinguishes it from each of these conditions.

However, atelectasis may be partial or lobular in distribution. Indeed this is its most frequent and most confusing form. The onset is insidious, the symptoms moderate, and the signs are practically the same as those of a mild broncho-pneumonia. Such a case may clear up or may progress into a massive collapse or be complicated by infection. If one can demonstrate displacement of the heart, he can easily differentiate it from pneumonia. Another diagnostic point is the variability of physical signs in atelectasis; they may be presented at one time, an hour later they may be gone and within another hour return again.

That lobular atelectasis is often hard to distinguish from pneumonia is well illustrated in the following case. A man, who had a partial gastrectomy done under nitrous oxide oxygen anaesthesia on January 3,

1929, complained of pain in the right lower chest and cough on the next day. He was somewhat cyanotic but examination of his chest was negative. Temperature, pulse and respiration were 101.2, 110, 25. Carbon dioxide inhalations were given. The next day he raised thick, greenish, tenacious sputum; there was slight impairment at the right base posteriously, but no rales nor change in breath sounds were heard. Four days after operation there was dullness at the right base posteriorly and a small area where tubular breath sounds and a few crepitant rales were heard. Temperature, pulse and respirations were 101.2, 120, 20. Roentgenogram taken on this day was interpreted as showing either atelectasis or pneumonia; but as there was some displacement of the heart to the right, and as the temperature and pulse rate were normal on the next day, a clinical diagnosis of atelectasis was made. The physical signs did not entirely clear up nor did the patient stop raising sputum until twelve days after operation. The lung fields were clear by roentgenological examination on that day. The probable explanation of this man's clinical picture is that he developed a lobular atelectasis in which area a low grade infection took place, and a mild broncho-pneumonia resulted.

The fact that atelectasis has occurred under many different circumstances indicate that more than one etiological factor may be involved. Several theories have been advanced and none of them quite explains all the clinical observations that have been made.

Pasteur (5, 6, 7 and 8) whose first experience was with atelectasis occurring in diphtheritic paralysis of the diaphragm in writing about post-operative atelectasis stated that the condition was always the result of a reflex disturbance of the mechanism of respiration, resulting in the distending forces of the lungs being so diminished that the contractile forces become stronger and an active collapse of the lungs takes place.

No other observer agreed with Pasteur. If paralysis of the diaphragm were the determining factor, it should come more frequently after phrenicectomy. No observer has reported collapse occurring after phrenicectomy in animals. Last fall I reported one case that followed phrenicectomy in a human being. Doctor W. E. Lee, (9) of Philadelphia, has written me that several cases have occurred in Philadelphia following phrenicectomy. My case was a girl who had a chronic suppurative pneumonitis. A left phrenicectomy was done to stop repeated hemorrhages. Several days later she developed a massive collapse of the left lung. I felt at the time that paralysis of the diaphragm by making expectoration more difficult was only a contributory factor because there was present in her bronchi and lungs enough thick mucopurulent secretion to produce obstruction. I suspect that this is true in the cases mentioned by Doctor Lee.

Rose Bradford (10) reported cases following gunshot wounds and trauma of the trunk and extremities, and described cases of contralateral collapse occurring after trivial non penetrating wounds of the chest wall. He also reported two cases that came to autopsy and did not show obstruction. He believed such collapse to be a reflex phenomenon.

Cameron (11) believes that reflex spasm of the bronchial muscle explains the phenomenon, and quotes the experimental work of Dixon

and Brodie who by vagal stimulation produced bronchial-constriction and collapse.

Carlson and Luckhart (12) produced contraction of the sac-like lungs of amphibians by electrical stimulation of the nasal passages, small and large bowel, kidney and bladder.

Scott and Cutler (13) believe the process is initiated by a nervous reflex, probably largely vasomotor, which results in a narrowing of the lumen in peripheral bronchioles by venous engorgement swelling of the mucous membrane, and elaboration of a tenacious secretion.

In a series of fourteen cases of lumbar sympathectomy done at the University Hospital, two cases developed atelectasis, a percentage of 14.5 which is much higher than the incidence of 0.6 per cent reported by Scott and Cutler (13) as occurring after all types of operation. This higher incidence in cases in which a reflex through the sympathetics and vagi might well arise, and the cases reported, in which no obstruction in the bronchi have been found, lend some evidence to the fact that a reflex producing a vasomotor or bronchomotor spasm may be the determining cause of atelectasis.

Many observers believe that complete obstruction of the bronchus by means of thick tenacious sputum, allowing the residual air to be absorbed, is the true explanation of atelectasis. In support of this theory lies the bulk of experimental and clinical evidence. Obstructive atelectasis was produced in animals as early as 1842. Recently Coryllos and Birnbaum (14) have produced at will collapse of the lung by obstructing a bronchus. They state that obstruction is the only cause of atelectasis. Furthermore, depending upon the length of time of the obstruction and the virulence and type of organism present, they have been able to produce pneumonia, pulmonary abscess or gangrene. They go so far as to state that all cases of pneumonia start as an atelectasis, the sequence being first bronchitis, second bronchial occlusion and atelectasis and third pneumonia.

Lee and Jackson (14, 15 and 16) and their co-workers state three constant etiological factors are present.

1. Embarrassment of respiratory movement resulting from posture, painful wounds, tight bandages or an abnormal increase in intra abdominal pressure.
2. The presence of a thick viscid tenacious bronchial secretion.
3. The inhibition or loss of the cough reflex, resulting from the pain consequent to the operation or following the administration of such sedative drugs as morphine.

As a result of these factors the tenacious bronchial secretions accumulate in the dependent portion of the bronchial tree until it reaches such a bulk as to occlude the lumen of the bronchi. When this happens atelectasis in varying degrees develop in the pulmonary tissue distal to the point of obstruction. If small bronchioles are obstructed a lobular collapse occurs, if the main bronchus to a lobe, a lobar collapse, and if the primary bronchus, the whole lung collapses.

They were able to produce atelectasis in dogs by reproducing the contributory factors and by injecting into the bronchus bronchial secretions obtained from a patient and by an acacia mixture of the same

viscosity as the sputum. They were able to relieve the condition by removing the obstruction.

In a recent communication Dr. Lee (17) states that collapse has been observed recently as a complication of attacks of bronchial asthma. Believing that allergy might play a part in the production of this phenomenon he has further investigated his patients and states nine cases of post-operative atelectasis have been tested and their histories obtained and that all were found to be allergic. In all the consistency of the sputum has been viscid tenacious and purulent and that pneumococci type IV was found in pure culture. Positive cutaneous test showed four reacting to pollen, one to animal emanation and four to bacteria.

He suggests that allergy may be the primary factor in the production of the phenomenon of atelectasis. Probably a broncho spasm is produced and a thick secretion is elaborated. The collection of this thick secretion leads to obstruction.

It seems to me that the bulk of clinical and experimental evidence favors the obstructive theory of atelectasis. That reflex and spasm may be causative factors cannot be denied. But probably reflex inhibition of the diaphram, reflex inhibition of cough, posture, tight dressings that interfere with breathing and the over use of morphine and atrophine contribute to the development of the condition, but actually it does not develop unless secretions collect and obstruct a bronchus.

Whether atelectasis is the result of spasm or obstruction, or both is not decided, but clinically it has been shown that to prevent the development of atelectasis one must prevent the collection of mucus in the bronchi. This is best done by making the patient change his position in bed frequently and by encouraging him to cough and by the administration of carbon dioxide.

Henderson (18) states that shallow breathing strongly predisposes to bronchial obstruction and thus to atelectasis. Contra-wise deep breathing tends to distend the lungs and to reopen areas of atelectasis. The natural stimulus to deep breathing is carbon dioxide. He first advocated its use to prevent pneumonia after carbon monoxide poisoning, and now advocates its use in the treatment of pneumonia and in the prevention of atelectasis.

Scott and Cutler (13) have shown that the routine hyperventilation of the lungs by administration of carbon dioxide and oxygen after all anæsthetics has reduced the incidence of atelectasis from 0.6% to 0.2% in their experience. They advocate its use as a prophylactic and curative agent.

Fortunately, atelectasis is not a necessarily dangerous condition. Most cases will recover. Some of the cases of massive collapse if not properly treated will die, and a fairly large number will develop complications.

The treatment of atelectasis is directed to encouraging the patient to cough by turning him over on the normal side and by shaking him, and to producing deep breathing by administration of carbon dioxide inhalations. In my experience these two measures have been ample. I believe the carbon dioxide inhalations to be especially valuable. At the University Hospital it is now routine to give these inhalations at the first symptoms of respiratory trouble.

Lee and Jackson (15) strongly advocate bronchoscopic drainage and they have shown some striking and dramatic results from this method. If an expert bronchoscopist is available, bronchoscopic drainage in the cases of massive collapse will give the quickest relief and should be used.

After complications have developed the treatment must be directed to controlling the complication.

Summary:

1. Post-operative atelectasis or collapse of the lung is not an infrequent complication of operations. Its clinical features are described and its relation to pneumonia discussed.

2. The larger portion of clinical and experimental evidence supports the theory of obstruction of a bronchus by thick, tenacious secretions as being the cause. Inhibition of the cough reflex, inhibition of diaphragmatic movement, and the interference with respiratory movements by posture, tight dressing, and the free use of morphine are contributory factors.

3. I believe that the routine use of carbon dioxide inhalations after anæsthetics will reduce the incidence of pulmonary complications.

4. Inhalations of carbon dioxide and measures to make a patient cough will relieve the condition in the majority of cases, but bronchoscopic drainage, if available, should be used in cases of massive collapse.

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ANNUAL REPORT BOARD OF MEDICAL EXAMINERS, STATE OF NORTH CAROLINA

Your Board of Medical Examiners reports a successful year's work. At the meeting in June, 1929, 94 applicants were licensed by examination and 25 applicants by endorsement of credentials; and in November, 1929, 20 applicants were licensed by endorsement of credentials. The list accompanies this report. The type of applicants remains high and we hope we have added only competent men to the profession of this State. There were 8 failures upon examination. One license was revoked on account of a violation of the Harrison Narcotic Act, where the defendant had served a sentence in a federal prison.

The report is saddened by the fact that we must report the loss by death of our senior member and first President of the Board, Dr. Walter W. Dawson. He was a valuable member of our group and his death has saddened our year's work. He presided with justice and was alert to the proper function of a medical examining board. As an examiner in his chosen field of anatomy, he showed himself capable and just. Your Board elected Dr. D. T. Tayloe, Jr., to fill the vacancy caused by the death of Dr. Dawson.

This report is presented by the President since the Secretary is absent due to a prolonged stay in a hospital for surgical treatment.

PAUL H. RINGER, *President*,
JOHN M. MACCONNELL, *Secretary*.

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Hart, Julian Deryl	Johns Hopkins Hosp., Baltimore, Md.	Med. Col. S. C. S. C.
Kirby, William Leslie	111 Highland St., Nashville, Tenn.	Johns Hopkins Md.
Miller, William Henry	70½ Bogard St., Charleston, S. C.	Vanderbilt Tenn.
Nowlin, George Preston	408 N. Church St., Charlotte, N. C.	Tufts S. C.
Perry, Leora	Ridgeland, S. C.	U. of Va. Nat. B.
Shands, Alfred Rives, Jr.	901—16th St., N. W., Washington, D. C.	Med. Col. S. C. S. C.
Taylor, John Eldredge	Anjean, W. Va.	Univ. of Va. Committee on Licensure
Vinson, Porter Paisley	507—9th Ave., S. W., Rochester, Minn.	Med. Col. Va. W. Va.
Spurgeon, Boone Moore	607 Profes. Bldg., Portsmouth, Va.	U. of Md. Md.
		U. of Va. Va.

REPORT OF HOUSE OF DELEGATES

Dr. L. B. McBrayer, Secretary-Treasurer, presented the report of the House of Delegates, which on his motion was adopted.

Officers 1930-31

President—Dr. J. G. Murphy . . . . . Wilmington
President-elect—Dr. M. L. Stevens . . . . . Asheville
First Vice-President—Dr. C. A. Julian . . . . . Greensboro
Second Vice-President—Dr. J. W. Davis . . . . . Statesville
Place of Meeting . . . . . Durham
Chairman of Arrangements—Dr. Lyle S. Booker . . . . . Durham

For other committees and delegates see Minutes, House of Delegates.

INSTALLATION OF OFFICERS

President Crowell: I shall ask Dr. Adams to escort the new president to the chair and ask Dr. Shore to escort Dr. Stevens to the front.

(This request was complied with.)

We have representation here from the extreme east and the extreme west, and that I think is very fortunate. I have known Dr. Stevens for many years; in fact, since my graduation from medical college I have known him well and intimately, and it gives me great pleasure to present Dr. Stevens to you as your President-Elect. (Applause)

I was on the Board of Medical Examiners with this man (Dr. Murphy) for six years. His rulings were always fair and impartial. He is a man who is a credit to the medical profession of this state, and you have honored yourselves, gentlemen, in honoring him. I present to you Dr. Murphy. (Applause)

Dr. J. G. Murphy, *President:* Mr. President, and members of the Medical Society of the State of North Carolina: I wish to express to

you my profound appreciation of your personal kindness to me in electing me to this high office. Following in the footsteps of those who have held the office before me, men like Crowell and MacNider and Royster and Wood and Dr. Lewis and others, I have a profound sense of my unworthiness. That stimulates in me a greater appreciation of what you have done and a strong determination and desire on my part to give you as good service as I can, that the high standards of the Medical Society of the State of North Carolina may be maintained. With our eyes fixed on the stars we look forward to higher and better things for medicine in this good State of North Carolina. I thank you.

We shall be glad to hear now from the President-Elect.

Dr. M. L. Stevens, *President-Elect:* I appreciate greatly, gentlemen, the honor you have given me in electing me to this high office. I can think of no honor I could covet more. I have been a member of the Society for a long number of years, long enough for you not only to know me but to know my limitations; and the fact, that, knowing these limitations, you have elected me, makes me think that I can depend upon you for the necessary coöperation in fulfilling the duties of the office to which you have elected me. I can only say that in service, I will give you the best which I am capable of giving.

President Murphy: A custom has been established and a fund is provided the proceeds from which go to provide a past president's jewel for the past presidents of the State Medical Society. I hold now in my hand the jewel to be presented to our retiring president, on one side of which is the seal of the Medical Society of the State of North Carolina. On the other side is engraved the name of the president and the date: "L. A. Crowell, President 1929-1930."

Dr. Crowell, it gives me great pleasure to present to you this golden jewel as an evidence of the faithful service you have given the State Society during the past year.

Dr. Crowell: Thank you, very much.

President Murphy: A motion to adjourn is now in order.

On motion, the meeting adjourned sine die.

CONJOINT SESSION

OF

STATE BOARD OF HEALTH

AND THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

WEDNESDAY, APRIL 30, 12:00

(Ballroom, Carolina Hotel)

Dr. A. J. Crowell, President State Board of Health, Presiding.

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

A. J. Crowell, M.D., President, Charlotte.
Cyrus Thompson, M.D., Jacksonville.
Thomas E. Anderson, M.D., Statesville.
E. J. Tucker, D.D.S., Roxboro.
D. A. Stanton, M.D., High Point.
James P. Stowe, Ph.G., Charlotte.
John B. Wright, M.D., Raleigh.
L. E. McDaniel, M.D., Jackson.
Charles C. Orr, M.D., Asheville.

EXECUTIVE STAFF

Charles O'H. Laughinghouse, M.D., Secretary and State Health Officer.
Ronald B. Wilson, Assistant to the Secretary.
H. A. Taylor, M.D., Deputy State Health Officer.
C. A. Shore, M.D., Director State Laboratory of Hygiene.
G. M. Cooper, M.D., Director Bureau Health Education.
H. E. Miller, C.E., Chief of Bureau of Engineering and Inspection.
F. M. Register, M.D., Director Bureau of Vital Statistics.
George Collins, M.D., Director Bureau of Maternity and Infancy.
Ernest A. Branch, D.D.S., Director Oral Hygiene.
D. A. Dees, M.D., Field Assistant in County Health Work.
A. B. McCreary, M.D., State Epidemiologist.

The Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health met in the ballroom of the Carolina Hotel and was called to order by Dr. A. J. Crowell, President of the State Board of Health.

Dr. Chas. O'H. Laughinghouse, State Health Officer, read the following and was followed by Dr. H. H. Bass, State Chairman for Cancer Control:

ANNUAL REPORT OF THE CONJOINT SESSION OF THE NORTH CAROLINA STATE BOARD OF HEALTH AND THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA—1930

It is good to be directed by legal enactment and permitted through your courtesy to make a report of the progress of the State Board of Health for the fiscal year of 1929-30.

Since our last report, with the exception of the Bureau of Life Extension and the Bureau of County Health Work, every Bureau of the Board has functioned to its full capacity and without material change in policies or activities, details of which will be published in the Biennial Report, expected from the press before the Legislature convenes in January.

The Bureau of Life Extension has been discontinued, Dr. F. R. Taylor, its efficient Director, having carried the message of periodic health examinations to all the rural counties and to the schools of higher learning in the State. We are happy to advise that Dr. Taylor's activities were received most cordially by the profession and the public and we are informed that among other things a number of physicians have employed office nurses and find them to be most satisfactory assets, both professionally and financially. Periodic health examinations are being carried on more generally in the State than heretofore and physicians who have given the work particular attention, express universal satisfaction with results.

Dr. C. N. Sisk having resigned as Director of County Health Work, and Dr. A. B. McCreary having succeeded Dr. H. A. Taylor as Epidemiologist, the Bureau of County Health Work per se has been abolished and is being furthered from the Executive Office, the work being under the immediate supervision of Dr. H. A. Taylor, Deputy State Health Officer.

Instead of coöperating financially with county health departments as formerly, the future policy will be to give financial assistance to specific activities to be agreed upon by county health departments and the Board of Health, this policy to become effective in July. In so far as possible, it is our purpose to encourage county boards of health to transfer the medical attention of county charges to the practicing physicians of the county, so that county health officers, particularly those with lean budgets and sparse personnel, can give more nearly their entire attention and time to health education and other activities embodying the fundamentals of actual health work. We have already changed the plan of record keeping in county health departments from the Cost Equivalent System, which puts a specific price on every health activity, to the Appraisal Form of evaluating county health work. This plan does not seek to discover weaknesses in county health department administration, but it does seek to find out a health department's needs, so that the county can perfect a plan of activities, commensurate with its budget, and the quantity and quality of its personnel.

The Appraisal Form puts us in position to find out what is lacking in health departments. It gives an insight into the possibilities of

departments. It recalls the things that ought to be done. It gives a chance to profit by group judgment and by a fair and just comparison. It assists in finding facts, and enables a health department to check itself against itself, or in other words, to check itself as it now is with itself as it may desire to become; just as a golfer playing not against himself, but against par. If, for example, a county health officer is deciding upon measures to control a communicable disease, the appraisal form assists him in taking account of its seriousness as a disease causing death and disability. It helps to decide the degree of communicability, the extent to which the disease can be prevented, the essential features for prevention, and the cost involved. The appraisal form gives the consensus of opinion on the essential details of health work. Its standards are not final. On the contrary, they will be revised from time to time, by a national committee of the American Public Health Association; the future revisals being dependent upon the newer knowledge of health measures, health department policies, and practices.

Since our last report, the State has in certain places become more or less stampeded because of the existence of undulant fever. According to the Laboratory of Hygiene, there have been six cases found in the State within the fiscal year with no deaths. We are in position to advise that as yet undulant fever has not come to be a serious problem in North Carolina. We are giving it continuous study and up to this report we have taken no definite action further than:

(1) To have every blood specimen received by the laboratory for a Widal examination to be examined also for undulant fever. 1,342 specimens have been examined from all parts of the State.

(2) To make a definite arrangement with the Department of Agriculture to eliminate all diseased cows from every herd in the State as rapidly as is feasible and practical.

Through a coöperative arrangement with the United States Public Health Service and the Rosenwald Fund, we are putting on an experiment for syphilis control among Negroes in a rural county. We are getting Wassermanns from the Negroes and we are preparing to treat the positive cases by such plans as are outlined by the United States Public Health Service, the treatment being carried on with the consent and with the coöperation of the local medical society.

Cerebro-spinal meningitis is evidencing itself in practically every section of the State. The cases are sporadic; the death rate is high; but so far, no section has suffered an epidemic. We have given the physicians and the public, through the press, such information as we have concerning the number and location of the cases. We are advising immediate isolation on the appearance of prodromal symptoms, followed by spinal puncture and the sending of specimens of spinal fluid to the laboratory. And, in case the fluid is found to be cloudy, we are advising the administration of anti-meningococcic serum without delay. We are also in position to supply anti-meningococcic serum at cost to the physicians of the State.

Pellagra is increasing in North Carolina by leaps and bounds. We find that many of the patients have no physician. We are endeavoring to get assistance from the home demonstration agents situated in the

counties, who are being requested to visit cases of suspects of pellagra in order to teach them their need for a physician and the value of a balanced ration and to show them how to cook properly the food that makes up such a ration.

You will recall that Dr. H. H. Bass was appointed by the Medical Society of the State of North Carolina as Chairman of the North Carolina Society for Cancer Control, he to work in coöperation with the American Society for Cancer Control and with the Board of Health. The last Legislature incorporated $5,000 in the budget of the State Board of Health with the understanding that we were to coöperate with Dr. Bass, furnishing him such financial assistance for a stenographer, travel, postage and printing, as the appropriation for cancer control with its legally prescribed limitations could allow. Dr. Bass, in coöperation with the State Board of Health, has without salary done a most excellent piece of work and I am asking that this Conjoint Session permit him to make his own report.

Fifty years ago the First Biennial Report of the State Board of Health was submitted to his Excellency, Governor Thomas J. Jarvis. Henry Ford says "History is bunk." Be that as it may, we believe it not only timely but essential to remind this Conjoint Session of the fact that its State Board of Health has completed its first half century of existence. If we dared presume upon your time sufficiently to present the high lights of the Board's progress, the story would read as a veritable romance. Indeed when we keep in mind the fact that it has lived and moved and had its being contemporaneously with the development of a State, emerging as it has from the despond and seemingly insurmountable chaos and poverty of the period of reconstruction, following the Civil War, the Board's development and expansion is nothing less than miraculous. The view in retrospect, however, covers so many years, developments and policies, and contains such a wealth of material interwoven with the State's progress in toto, that we will forego allusions to the past except to say that the loyalty through the years of the General Assembly, this Society, the press and the public; awakened, directed and stimulated, as they have been by the men to whom the Board has been intrusted, has given us a firm and sound foundation on which to build a satisfactory service for the future.

The State has come to know that there can be no real life or happiness where the public's health is not provided for; that the State is in the discharge of its first duty when it seeks to maintain the chief aim of existence; that the care of the health of the people and the respect for the government of the people is the first duty of the statesman; that whatever is needed for the establishing and maintaining of the public health must be provided; that health comes first in the science of political economy; that it affects most vitally the wealth of a nation and the prosperity of a people. The physicians of the State have come to appreciate the value of an expressed understanding and agreement between themselves and the Board and by proclamation of this Society have gone on record in defining the Board's field of endeavor and directing it to engage in any practice or policy provided for in the

legislative acts of the State, which has to do with the prevention or treatment of disease and which may include:

(1 Legislation which provides for the education of the general public in matters of personal hygiene, giving the people a higher appreciation of the value and use of medical science through printed matter, addresses, moving pictures, visiting nurses and other means of approved educational value.

(2) Legislation which provides public laboratories for assisting the profession in the diagnosis of specimens of pathological material and for providing the profession with various biological products of preventive and curative value.

(3) Legislation which provides for immunization by vaccines and sera of the general public against smallpox, typhoid and other infectious diseases, for which approved vaccines and sera are available.

(4) Legislation which provides for the reporting of births, deaths and communicable diseases and prescribes measures for the restriction of the spread of contagion.

(5) Legislation which provides for the physical examination of school children and the detection of those which are retarded, and which retard their classmates, by defects, so frequent among the school population, as to have appropriately acquired the term, "Common defects of school children";—to the practical end that the finding of such defects will stimulate an interest in both local profession and public that will result in their correction.

(6) Legislation which provides dispensaries for the examination and treatment of diseases of such prevalence and far-reaching effect on the public health, as to constitute large and unnecessary handicaps to social progress. For example, dispensaries for venereal disease and dispensaries for the treatment of trachoma and hookworm disease.

This is the highway upon which the Board of Health is traveling. It will not depart from it and because it will not, it cannot find itself in any private drives or boulevards that happen to lead into forbidden places and personal preserves.

"Train a child up in the way he should go, and when he gets old, he will not depart from it,"—is evidenced by the fact that the head and heart of the medical profession of North Carolina, have been so sincerely and unselfishly interested in the development of the Board, that peace, confidence, and concord reign among us; and we come before you today with complete faith in your continued support, and with the full determination of making the next fifty years of even greater accomplishment than the past half century has been.

This is a startling prediction, but it is founded on the record wherein it is told that in 1888 we had 3,966-2/3 deaths from diphtheria in every hundred thousand of our population. Today we have but twelve. In 1888 we had 4,450 deaths per hundred thousand from typhoid fever—today we have but 6.4. Keep faith with us and give us generously of yourselves, and before 1980 we will reduce the death rate from whooping cough and measles as dramatically as in the last half century we reduced diphtheria and typhoid. The maternal death rate will fall from its present disgraceful figure to the deaths that come from un-

avoidable accidents in labor. The toxemias of pregnancy will have passed; the traumatisms of labor will be lessened; obstetrical infections will be no more. The common defects of preschool and school children, which have as their sequel the degenerative diseases, will be largely a matter of history; scarlet fever will be eliminated; deaths from smallpox will have been banished. Venereal disease will be more nearly controlled. Cancer may be conquered. Tuberculosis will have taken its place in history with cholera and plague. Sanitation and prevention will have become habit among men.

Have we hitched our wagon to a star? We have because we believe in you; and you know that after the verb "to love," "to help" is the most productive verb in all the world.

"Faith, with works, will remove mountains," saith the Master. So, if the profession will but enlist and determine to fight constantly, broadly and unselfishly under the flag of "Disease Prevention"—in 1980 a nobler race of men will walk beneath the stars and wander by the shores. We cannot guess their glory, but methinks, the sky and sea will bring to them more of gladness than they brought to you and me.

CANCER CONTROL

Dr. H. H. Bass, Durham

State Chairman, Representing the National and State Societies for Cancer Control and the State Board of Health

As State Chairman of the North Carolina Committee of the American Society for the Control of Cancer, as constituted and appointed by the Medical Society of the State of North Carolina, I hereby submit the following Annual Report to the State Board of Health, the Medical Society of the State of North Carolina and the Conjoint Session of these two organizations:

During the last Legislature the following resolutions were formulated:

Whereas, in North Carolina cancer is now causing the death of fifteen hundred (1,500) citizens of the State annually; and

Whereas, the deaths from cancer in North Carolina have been steadily increasing in number, year by year, for a period of years; and

Whereas, the deaths in North Carolina from this disease cause an economic loss in excess of fifteen million dollars annually; and

Whereas, in connection with the annual meeting of the Medical Society of the State of North Carolina held at Pinehurst in April, 1928, a North Carolina division of the American Society for the Control of Cancer was organized with the following executive committee elected: Dr. Charles O'H. Laughinghouse, Raleigh, President; Dr. L. A. Crowell, Lincolnton, Vice-President; Dr. A. C. Bulla, Raleigh, Secretary-Treasurer; Dr. W. C. Davison, Durham; Dr. W. S. Rankin, Charlotte; Dr. Wm. DeB. MacNider, Chapel Hill; Dr. Thurman Kitchin, Wake Forest; Dr. John W. MacConnell, Davidson; Dr. Isaac H. Manning, Chapel Hill; Dr. L. B. McBrayer, Southern Pines; Dr. E. Delia Dixon-Carroll, Raleigh; Dr. Anna M. Gove, Greensboro; Dr. John MacRae, Asheville; Dr. Marjory Lord, Asheville; Dr. W. D. James, Hamlet; Dr. H. B. Ivey,

Goldsboro; Dr. L. S. Booker, Durham; Dr. F. R. Taylor, High Point; Dr. John T. Burrus, High Point; and

Whereas, Dr. H. Hartwell Bass of Durham, was elected by the Medical Society as State Chairman for North Carolina and was directed to conduct an intensive educational campaign in the State in coöperation with the North Carolina State Board of Health and the Medical Society of the State of North Carolina for the purpose of acquainting the citizenship of the State with the known scientific facts about cancer, its prevention and its treatment; and

Whereas, the said State Chairman is giving his time and energy to this cause without compensation and at considerable expense to himself;

Therefore, Be it enacted by the General Assembly of North Carolina:

Section 1. The sum of Twenty-five Hundred Dollars ($2,500.00) is hereby appropriated annually for the fiscal years 1929-30 and 1930-31 to the North Carolina Committee of the American Society for the Control of Cancer of which Dr. H. Hartwell Bass of Durham is State Chairman for the purposes of paying necessary expense of clerical assistance, postage, stationery, travel expense, and other incidental expenses: provided, that no part of the sum herein appropriated shall be used as payment of salary to the State Chairman of the Committee, or the salary of any member of the Committee.

Section 2. This Act shall be in force from and after its ratification.

These resolutions were not enacted into law, but they brought the question of cancer control to the attention of the Appropriations Committee, which committee appropriated $2,500.00 annually for the fiscal years of 1929-30 and 1930-31 for the purpose designated by the Resolutions. This was done by writing into the budget of the State Board of Health the sum of $5,000.00 for the control of cancer, to be expended by the State Chairman for the Control of Cancer under the direction of the State Board of Health.

The Chairman of the State Society for the Control of Cancer proceeded:

(1) To organize a North Carolina Society for the Control of Cancer, this society being a unit of the American Society for the Control of Cancer.

(2) To conduct an intensive educational campaign throughout the State.

(3) To ascertain and correlate the facilities for treating cancer in the State.

The organization of the North Carolina Society for the Control of Cancer was consummated as follows:

By requesting each county medical society to appoint a permanent cancer committee to affiliate with the State Society for the Control of Cancer and coöperate with the State Chairman of the American Society for the Control of Cancer. The following counties elected these committees:

Buncombe County—Doctors A. B. Craddock, Chairman; Marjory J. Lord, W. P. Herbert, J. D. MacRae.

Yancey County—Doctors C. A. Cheadle, John B. Gibbs, Wilber B. Robertson.

Carteret County—Doctors B. F. Royal, C. S. Maxwell, K. P. B. Bonner.

Durham County—Doctors R. L. Felts, D. R. Perry, L. S. Booker.

Forsyth County—Doctors W. H. Sprunt, E. A. Leggett, N. A. Bowers, J. F. Belton.

Guilford County—Doctors C. C. Hudson, J. W. Tankersley, J. T. Mann.

Halifax County—Doctors J. W. Martin, O. F. Smith, L. E. McDaniel.

Hoke County—Doctors R. Murray, I. P. Matthewson, P. P. McCain.

Iredell County—Doctors R. S. McElwee, Davis McClelland, J. W. Davis.

Johnston County—Doctors W. J. B. Orr, S. A. Duncan, G. S. Coleman.

Lenoir County—Doctors E. R. Boney, W. T. Parrott, Frank Sebastian, W. H. Dixon, F. P. Wooten, I. M. Hardee, R. S. McGeachy.

Lincoln County—Doctors W. F. Elliott, J. R. Gamble, R. E. Lee.

Mecklenburg County—Doctors J. P. Monroe, R. H. Lafferty, R. B. Knight.

Onslow County—Doctors C. W. Sutton, E. L. Cox, Cyrus Thompson.

Rockingham County—Doctors J. B. Ray, J. W. McGehee, H. C. Dixon, L. L. Anderson, N. G. Wilson.

Rutherford County—Doctors C. F. Glenn, T. C. Lovelace, W. C. Bostic.

Union County—Doctors G. M. Smith, J. E. Thomas, C. A. Bolt.

Wake County—Doctors Chas. R. Bugg, A. S. Oliver, C. E. Flowers.

Wayne County—Doctors H. B. Ivey, W. H. Cobb, James Rose; making in the aggregate nineteen counties which appointed permanent Cancer Committees.

The following counties did not appoint permanent Cancer Committees, but assisted in the distribution of literature and such other services as they were called upon to perform:

Wilson County—Dr. L. J. Smith, whole-time County Health Officer.

Alamance County—Dr. W. R. Goley.

Anson County—Dr. L. C. Smith.

Martin County—Dr. W. E. Warren.

Beaufort County—Dr. R. E. Windley, whole-time County Health Officer.

Bertie County—Dr. J. E. Smith, whole-time County Health Officer.

Caldwell County—Dr. W. M. White and R. W. Petrie.

Cherokee County—Dr. W. C. Morrow, whole-time County Health Officer.

Cleveland County—Dr. D. F. Moore, Dr. J. W. Hardison, Dr. J. W. Wood.

Craven County—Dr. D. E. Ford, whole-time County Health Officer.

Edgecombe County—Dr. R. E. Broadway, whole-time County Health Officer and Dr. H. L. Large.

Granville County—Dr. J. A. Morris, whole-time Health Officer.

New Hanover County—Dr. J. H. Hamilton, whole-time County Health Officer.

Northampton County—Dr. M. H. Seawell, whole-time County Health Officer.

Pitt County—Dr. Clem Ham, whole-time County Health Officer, and Dr. C. C. Joyner.

Robeson County—Dr. E. R. Hardin, whole-time County Health Officer.

Vance County—Dr. F. R. Harris, whole-time County Health Officer.

The Metropolitan Life Insurance Company and the Pilot Life Insurance Company, through their agencies in all parts of the State, assisted materially in distributing literature.

In the following counties the organization consisted of county boards of education, and literature was distributed directly through the teachers of the county and the Parent-Teacher organizations:

Alamance, Chatham, Columbus, Cumberland, Gaston, Haywood, Jackson, Jones, McDowell, Nash, Pamlico and Swain.

Book clubs and Parent-Teacher Associations and Women's Clubs from all sections of the State volunteered their services and assisted materially in the distribution of literature.

This organization, above detailed, and under the direction of your Chairman, conducted a campaign by—

(a) An earnest endeavor to procure the coöperation of the physicians and the public. Every physician, every county board of health and every county health department was urged to take part in the work by appointing a local Cancer Committee to coöperate with the State Committee in furthering the control of cancer in their respective counties.

Unremitting effort has been made and is now being made, to interest religious, business, civic and social organizations in the subject of the control of cancer. Constant correspondence and newspaper publicity stressing the need for organization has been and is being carried on without ceasing. Talks have been made before these organizations and in the various educational institutions of higher learning in the State. Papers on cancer and its control have been delivered at the county and district medical societies. The second week in October was designated as *Cancer Week* throughout the State. Prior to this date three hundred thousand bulletins and pamphlets were distributed. The press was flooded with the importance of cancer control. Twenty radio talks were made from stations in Raleigh, Greensboro, Charlotte and Asheville. The press was again and again filled with newspaper articles. Cancer reels were shown in various sections of the State. Questionnaires were mailed to individual physicians to ascertain the number of cases of cancer each physician had in his practice. Questionnaires were also mailed to the hospitals of the State:

(1) To ascertain their facilities for treating cancer.

(2) To ascertain the number of hospitals owning or renting radium.

(3) The number of hospitals not using radium.

(4) The number equipped with deep therapy X-ray.

(5) The number equipped with moderate voltage X-ray for therapy.

(6) The number of beds occupied by cancer patients.

(7) The number set aside for treatment of cancer patients alone.

(8) The number owning deep therapy apparatus for free treatment of charity patients.

(9) The number with organized cancer clinics.

Twenty-eight counties held free diagnostic clinics. Thirty-nine distributed literature without holding clinics. We have records to show that fourteen hundred examinations were made. Four hundred and sixty-five incipient cases and three hundred and thirty-four active cases, totaling seven hundred and ninety-nine cases, were discovered and recorded. We assume a great many other cases went to the offices of private physicians.

By the law of averages, this means that there are more than five thousand active cases and more than six thousand incipient cases of cancer in the State today. Out of ninety-four hospitals in North Carolina with a bed capacity of 4,885, replies were received from sixty with a bed capacity of 3,301. The number not using radium was *thirty-six*. The number of hospitals owning and renting radium was *twenty-four*. The number equipped with deep therapy X-ray was *nine*. The number equipped with moderate voltage X-ray for therapy was *twelve*. The number of beds occupied by cancer patients was three and one-half per cent of the total number of patients. The number of beds set aside for treatment of cancer patients—*none*. The number of hospitals owning deep therapy apparatus where charity cases could receive free treatment—*none*. The number of permanently organized cancer clinics—*none*.

The following recommendations are submitted to this Conjoint Session:

(1) That all medical centers in the State be urged to organize and equip permanent cancer clinics for the diagnosis and thorough treatment of cancer.

(2) That the question of a central hospital properly equipped with diagnostic facilities, radium, deep therapy X-ray, high frequency apparatus and all things else necessary to the successful treatment of cancer, be submitted to a joint committee composed of representatives from the North Carolina Hospital Association and the Board of Councillors, their conclusions to be presented to this Conjoint Session at its meeting in 1931.

(3) In the event such an institution is approved, this Conjoint Session should submit for acceptance or rejection, definite proposals for a research cancer board composed of the members of the Medical Society of the State of North Carolina.

(4) That all general hospitals adopt a cancer service with standards set forth by the American Society for the Control of Cancer.

(5) That all physicians and hospitals not equipped for the diagnosis and treatment of cancer, avail themselves of the service necessary to proper treatment through contacts and arrangements with hospitals and cancer clinics equipped to give such service as modern medicine and surgery furnishes and demands.

(6) That the public be educated to frown down upon inadequate treatment, quacks, charlatans and cancer cures.

(7) That an earnest effort be continued to educate the people that cancer can be cured when taken to physicians in the precancerous and incipient stages.

(8) That the profession be urged to use the State Laboratory of Hygiene and private laboratories for the diagnosis of suspected tissues.

(9) That the Legislature be urged by this Society and individual physicians to continue and increase financial support for the purpose of reducing the death rate of cancer in the State of North Carolina.

No further business appearing, the Conjoint Session was adjourned.

SCIENTIFIC SECTIONS

SECTION ON PUBLIC HEALTH AND EDUCATION
SECTION ON PRACTICE OF MEDICINE
SECTION ON EYE, EAR, NOSE AND THROAT
SECTION ON GYNECOLOGY AND OBSTETRICS
SECTION ON SURGERY
SECTION ON PEDIATRICS

SECTION ON PUBLIC HEALTH AND EDUCATION

Dr. K. P. B. Bonner, *Chairman*, Morehead City

Tuesday, April 29, 1930, 2:00 P. M. ballroom, the Carolina Hotel, Pinehurst.

Chairman: We will come to order. The Chairman of the section on Public Health and Education this year, in deciding upon the best procedure in building a program for presentation to this section, decided upon the plan of handling the subject from the standpoint of the symposium, the general subject being "The Relationship of Public Health and Education." At the same time it was felt advisable from the standpoint of general information to the profession, for after all possibly we need to get a new slant and a new viewpoint upon things that many times are of vital concern, to invite a group of laymen, to discuss the subject. We are very fortunate in being able to present the group that you will hear this afternoon, and we feel sure that the time consumed will be well spent and that you will feel amply repaid. There is no question but what the practice of medicine faces a turning point in its career. It is up to the profession to recognize that trend, which may be for its betterment or for its injury. For that reason, I am very happy to present the group that are to speak to you this afternoon. We will first hear from Mr. A. T. Allen, State Superintendent of Public Instruction, of Raleigh, on "The Relationship of Education to Public Health." Mr. Allen. (Applause)

Mr. A. T. Allen: Ladies and gentlemen, perhaps it is not seemly for a school man to talk on a health program before a distinguished group of physicians. However incongruous it may seem, I am glad to have the opportunity. I hope we shall get on fine together. Before starting on the little which I have to say, I should like to pay my respects to the medical profession. No one can adequately state the debt which the world owes to the physician. In his efforts to alleviate suffering and to postpone death, he has been successful to an amazing extent. The profession and the practice of medicine rest upon a scientific basis as fully as any human enterprise can. With unceasing effort he pursues the facts; with uncanny wisdom he relates them to life. He respects the facts which come out of the laboratory. On his part there is no hesitation when fact and opinion come into conflict. He is constantly on the trail of some elusive and hidden secret. If, in the end of a long journey, he makes a discovery which might enrich him if he capitalized it for his own benefit, he generously dedicates it to the service of humanity. Moreover, his attitudes are largely altruistic; his interest in the welfare of people tends to make him unselfish. His allegiance to a professional code of ethics, his belief in high standards of training, and his impatience with sham mark him for distinction.

I am called upon to speak briefly of the relation between health and education. In trying to trace this relationship, I shall have in mind mainly the institution of public education and the enterprise known as public health. Why do we support education at the expense of the public? What promise does it hold? How does it affect life and the relations of men? Why do we spend tax money to try to keep people well? Do these two public undertakings conflict or harmonize with each other? Let us examine each of them briefly. The sustaining motive of public education has many phases. It has an economic phase because we believe it will make men more productive; it has a political phase, because we believe an educated citizenship will run a better government; it has a strong moral motive because we believe education will help men to behave in a seemly manner and improve their chances of living together in peace. The State in promoting public education is not actuated by motives of philanthropy and charity. It is trying to provide for the economic independence of its citizens—an independence which is finally to be won by the efforts of the individual. The State does not levy tribute on its citizens and spend the proceeds on the schools out of the spirit which prompted the widow to throw her mite into the box, however commendable that action may have been on her part. The State acts under the influence of self-interest and the hope of perpetuation. If the State is to prosper and become great, it must be sustained by the intelligence, the moral stamina, and the political sagacity of its citizens. There is no philanthropy or altruism in such an attitude.

History is full of instances in which one person has died for another; a mother for her child; a father for his son; a man for his friend. Greater love hath no man than this. John D. Rockefeller, out of his love for humanity, may give away his millions for the benefit of people whom he will never see. When the State invests in the public school or in public health it is looking for substantial benefits to itself, although such benefits may come indirectly. It expects them through the cumulative results of individual improvement. I conceive of the public school as an effort to enable every child born under our flag to do four things well. (a) *To become an individual in his own name and right.* He wants to be separate and distinct and different from every other individual. He does not desire to be merely one of of a group, or a specimen of a kind, but an entity which has value within itself, capable of growth and expansion, and endowed with the power to unfold from within. Such an individual is steadfast and not pliant or subservient. He will not change his outlook, as does the weathercock, with every puff of wind.

(b) *To become a self-determining individual.* If in this he succeeds, he will be able to carry his own economic load, to sustain his own moral rectitude and vote his own ticket. The old apprentice system put the individual in a groove from which he could not escape—except by almost superhuman effort. If you live in a groove, you will go straight. There will be no turning to right or left. There will be no expansion. There is no chance to exercise judgment or choice. He is no wiser at sixty than at twenty. The high school sets the youth

on a plane of opportunity. On that level he is free from many restrictions. There is a wide range of choice. Within the limits of his ability, he can determine for himself the direction his life will take. On that level he can free himself from economic slavery and win gloriously his spiritual freedom and political independence.

(c) *To become a coöperative individual.* Coöperation implies a degree of equality among the coöperating agents. A group of individuals—each with the power of self-determination—can meet on this level. If there is not a degree of equality among these people there can be no coöperation. The relationship will be that of king and subject; of lord and serf; of master and slave. Without this equality which goes along with individual self-determination, society becomes stratified and one group sits astride the neck of another. In America we are looking toward a different kind of civilization—one predicated upon the Declaration of Independence—and we have set up the public school to sustain it.

(d) *To become a participating individual.* Democracy means participation. Our whole governmental fabric rests upon that basis. Every citizen has his part. The State expects him to become capable of playing that part well. This in brief is what the school is for. This is what Thomas Jefferson and Horace Mann said it would do for a free people. This is the philosophy which has pushed it forward and caused the American people to pour out their money in almost unlimited millions. In practice, however, the expected results do not always materialize. Health work has come gradually into the schools. More than fifty years ago, physiology became a part of the course of study under the influence of Thomas Huxley. Then the discoveries of Pasteur startled the world. On the basis of this new knowledge, the sciences of hygiene and sanitation were developed. Under pressure from Prof. Sedgewick, of the Massachusetts Institute of Technology, their study became a part of the work of the school. The philosophy behind these movements suggested that the health of the people would be greatly benefited by the mere knowledge of these subjects. They doubtless did much good, but knowledge of itself does not affect behavior. For a hundred years teachers tried to reach the exceptional child through better teaching devices. After they had learned to do the best teaching known, there was still a large per cent of children who did not respond—who did not change their demeanor—and who were still an actual menace to the school and a potential one to society. Then the physicians were called in. Medical inspection of school children was introduced. The whole country was shocked at the tabulations of the results. Great numbers of children, suffering from remedial physical defects, were found in every school. After a few years of study, the ratio of the several kinds of defects could be predicted with reasonable accuracy. Perhaps even more shocking to the public mind were the revelations made by the physical condition of the drafted men for the World War. With these facts before them, the American people set out to meet the situation in a vigorous manner. Here was a great and new problem for the school and for society at large. The answer was the establishment of larger and more effective departments of health, the employment of

school physicians and nurses and the institution of school health programs. The motives behind this movement are the same as for education; economic, moral, and civic. In North Carolina we spend on an average about thirty dollars per year for each school child. If for any reason that child fails of promotion, the thirty dollars is lost, when measured in terms of intellectual or moral development. There are many thousand children in this State who fail of promotion annually on account of their physical condition. They not only fail to learn but oftentimes are most troublesome in their conduct. In place of moving towards better citizenship, they become a possible menace to society. How can they work when their bodies are tortured or their minds clouded? A filling in a tooth, a pair of glasses, or an operation on his throat often transforms an obstreperous, backward child into a tractable student, and enables him to make a grade a year. Why spend thirty dollars a year trying to teach a child who is laboring under a physical handicap, when a little medical attention will possibly remake him?

The motive behind a public health program might be stated as a threefold one: (1) Economic—to make more productive citizens; (2) Moral—to make citizens who can live at peace with themselves and their neighbors; (3) Civic—to make every citizen a sustaining member of society and not a dependent one.

It is claimed that the people of America lose annually $1,200,000,000 on account of illness. Public health work is intended to reduce that loss. A health program in connection with the school might be stated in outline as follows: (1) Health Instruction; (2) Formation of Health Habits; (3) Control of Communicable Diseases; (4) Provision of a Hygienic School Situation; and (5) Health Service. Each one of these main divisions can be divided into many appropriate heads. Health instruction and the formation of health habits belong peculiarly to the teacher. Of course, the scientist must tell us what to teach, but we think we can give the instruction better than the scientist himself. Health instruction is of little value unless the knowledge is translated into habitual conduct. The teacher working with both the parent and the child, is the only person who can deal successfully with it. Through the daily cleanliness examinations she brings about the habits of washing hands and brushing teeth. Through the socialized school lunch they form better eating and play habits. She can also supervise the efforts to improve posture and correctional exercises, the rest periods and the eating of undernourished children. This can only be done by persons in daily contact with the children. In the matter of immunization, the physician plays the leading part and the teacher a secondary one only. While the teacher after some preliminary training can do something in testing the eyes and ears, yet every child should have a thorough medical examination by a competent physician at least once every year. The most difficult part of the whole health program is to secure the correction of the defects after they have been discovered and tabulated. One way is to notify the parent of the trouble and make an estimate of what the work will be worth. The parent then takes the child to a physician for treatment. In many cases, the parent is either too poor or too hardened in his ways to give attention

to the matter. In such cases the whole thing comes to a stop. The dental and health clinics heretofore for school children have done worlds of good already. I am wondering if the follow-up work will not more and more result in dental clinics in which the teeth of the smaller children are actually treated. This will not interfere with dentists in private practice, but would bring them in the long run more practice; because the children find out what it all means. In the same way certain other simple operations might be performed by some surgeon employed by the State. There should, of course, be left an option with the parent as to what physician will do the work or whether the work will be done at all or not. If the State stands ready to do it without expense to the parent, many more parents, in my opinion, will have it attended to in private practice. The schools have, in my opinion, one justifiable complaint against the public health service. It is inclined to give too little consideration to the value of a child's time in school. We wait until school opens and then begin feverishly to vaccinate. For two or three weeks the school is in confusion and is operated under great difficulty. Children with sore arms are irritable and cross. Many of them remain out of school. The spirit of the school is broken down and it is hard to reëstablish. Furthermore, school hours are usually selected for medical examinations. Children are excluded from the public schools on account of contagious diseases, but the Sunday schools and churches go ahead. I have always been unable to see why a child would not catch influenza at moving picture shows as readily as in school. Schools are in session only six hours of the twenty-four, and for only 160 days out of the 365. Every day and every hour of that time should be devoted to the school's own program of activities. If remedial and immunization work could be carried on at hours and on days when the schools are not in session, much loss of time and unnecessary confusion could be avoided. If the schools are to do the work which has been assigned them, they will need every bit of the allotted time. The most promising and sensible development bearing on the health of school children is, from the standpoint of the school, the pre-school clinic. If all the children could receive the necessary medical attention during the first six years of their lives and before they start to school, they would, in my opinion, be much better off. I know it would greatly improve the school situation. This is now being done, to a considerable extent, in many communities. I hope it will continue until much of the work now being done during the school session will be attended to before the opening of school. The pre-school clinic rests upon the idea that a child shall have had all the apparent and necessary medical attention before he starts to school. Every bit of remedial and immunization work which is done before the child enters school greatly facilitates the whole program. If the health service could find some way to combat contagious diseases without so much loss of time from school another great advance would be made, and it would be entitled to the unstinted thanks of the schools as well as of the taxpayers themselves. Teachers, of course, do not understand all of the fine points of a physician's code of ethics. We are not concerned with the methods which shall be used to

bring relief to the school children. Whether it is done by physicians in private practice or by the health service itself is not a question for us to determine. We know, however, that it must be done if the schools are to function efficiently. Every school child has the same right to the proper medical attention that he has to an open schoolhouse door. Even if the ability of the child to do his school work were not affected by the medical service, it would still be worth all it costs in the happiness of the individual and in the prospect of a finer attitude on his part toward the world about him. These two public agencies must work in the closest coöperation because each is dependent in many ways upon the other. Unless you manage to keep the children well, we cannot teach them effectively. On the other hand, unless they are taught well you will have no vehicle through which you can spread your philosophy of public health. The more intelligent your community is, the easier it is for you to keep it well. How far can you get with a health program in a community in which all the people are ignorant? Health and education naturally grow together, otherwise they atrophy separately. The two enterprises rest upon the same philosophy of public service, and have the same general objectives in the advancement of civilization. For my part, I pledge you that the schools will do their best to meet you half way in every effort to improve the physical well-being of the childhood of this country. Through such a joint program we can visualize a civilization in which there will be fewer dependents, and in which a larger percentage will be able not only each to carry his own load, but also to bear his proportion of the joint load which failure and misfortune place upon every community. I thank you. (Applause)

CHAIRMAN: We thank you, Mr. Allen. The next gentleman you will hear, on "The Relationship of Public Health to Higher Education," is Doctor E. C. Brooks, President of North Carolina State College, of Raleigh. Doctor Brooks. (Applause)

DOCTOR E. C. BROOKS, President of North Carolina State College: Mr. President, Ladies and Gentlemen, it appeals to my vanity, when I think that I am qualified to become a member of this Society, this Association. And this gives me an opportunity to outline to you to some extent my training in order to prove to you what I have just said. In the first place, when I was superintendent of a city school system, discipline came under my supervision. I learned to operate adroitly on the whole body, and succeeded admirably, so they said! Then later on, when I became connected with Trinity College as head of the Department of Teacher Training, it was very interesting to me to observe mental differences, and joy sometimes would come when I could observe the appearance of intelligence, and I learned the value of the clinic. Later when I became Superintendent of Public Instruction it was a part of my work to relate the profession to business, and I have some understanding of the meaning of fees. But I think the best training that I have received and which qualifies me best to become a member of this body, has come to me since I became the chief executive of a large educational institution; for I have learned to use the gentle art of mental suggestion in such an adroit way that when I am non-committal it is

difficult for them to understand whether that attitude is due to lack of comprehension or low ignorance. (Laughter from audience). It was a very great pleasure, Mr. President, to receive the invitation to speak here this afternoon, and I have taken some liberties with the subject, and shall discuss the subject rather from the standpoint of the relation of higher education to public health, rather than as you have stated in the program. I know that in every discussion of public health, our mind turns almost always to a consideration of the greatest good to the greatest number. And that is right. But I have chosen this afternoon to emphasize, rather, the individual. And what I have here, a number of notes so adroitly arranged that if I should mix my sheets there would be just as much sequence as otherwise. And if the time should run out on me, there is no place on either sheet that serves a better example for a stopping place. I received some months ago a little volume called the story of a pine tree a thousand years old. I shall give you the outlines of that story, which will serve as a parallel to my theme. It was born, according to the story, in 856; it was taken down in 1903. The march of progress demanded its removal. And so scientists desired to make a study of it, and they proposed to take it down, and take it apart, layer by layer, in order to study its life history. At the age of twenty it received some injury, probably due to a snowstorm, that gave it the curvature of the spine; but it overcame that, and for a hundred years it experienced a rich growth; and this was followed by lean years of hunger and famine, and the layers were so thin that the scientists could hardly detect the growth. At the age of 140 it was injured by a falling tree, and in its side was stuck a limb, that started decay; and then life came back in its fullness and passed; and for nearly two hundred years it had rich growth again. And then violent storms attacked it, and tore away its arms, and apparently stunted its growth for the time being, and insects and other disease entered its body. And then life came back in its fullness, and the disease or the attack was covered up, and nothing save the sign seems to have remained. In 1540, at the age of 694, the Spaniards—but then, I should have said, at the age of 630, years before this, was the appearance of the cliff dwellers; arrowheads were found in its base. This tallies with history, and its about the beginning of the cliff dwellers in the southern Rocky Mountains. Then the Spaniards came, thirty years later; bullets appeared in its side, and the marks of an axe on its side; for civilization, civilized man is the only one that applies the axe in such destructive means to a growing tree. In 1804, droughts appeared; our history shows that this period is one of great droughts throughout the country. This was followed by earthquakes in 1812. You may recall that it was about that period that the Creeks had their great uprising in Tennessee and throughout the south, and General Jackson was called into play, and made history. They were excited to this revolt by this great earthquake, the signs of which appeared in the old pine tree. In 1859 some one had blazed on its side long marks indicating a blazed trail, and that is about the time the southern route was opened from the east to the gold diggers of California. And then in 1903 it was taken down. The remarkable fact is, not that it was attacked by disease or by its natural

enemies or by storms, but the remarkable thing is that life came back in its fullness, and when it was taken down the cellular life was as rich and as strong as it was in it at the age of twenty. The other remarkable fact is, that in the same soil and in the same climate and in the same area, countless thousands of trees were born and died and didn't have the vitality to renew themselves as they were attacked by their common enemies. And this, Ladies and Gentlemen, is the parallel of my story. Not that disease appears, but that life returns is the phenomena that attracts the admiration of the world. (Applause)

I shall take an individual and parallel it, and ask you, in your imagination to let's take him apart, layer by layer, as we have done the old pine tree. I am taking a man ninety years of age, who is in full possession of his faculties, whose mind seems to be alert, and whose body is still remaking life for itself. In my imagination in paralleling the old pine tree, I find that in childhood it was attacked by infantile diseases, good health seemed to disappear, and poor growth and lean years came to the infant child. Then life rushed back in it again, and in the early years and in adolescence it grew normal, and the rings or width showed rich growth. And then in later years adolescence appeared and we find it shaken by some kind of internal storm that we can't understand; it may be religion, it may be anti-social, it may be a misfit, some antagonism to the social law, that wrenched asunder the relationship between the mind and the body; and there were a number of years of lean growth and decay that set in. Then life came back again, covered up the scars that were left as a result of the attack by internal storms or by outward enemies. Then in middle life, between forty and fifty, we find there evidences that decay set in, and dissolution was threatened, due perhaps to business or profession, or to domestic or anti-social conditions, or perhaps starting with some physical defect; we can't tell whether the beginning was mental or the beginning was physical. Then life rushed back again, and for a period of forty years there was coördination and harmony and rich life, which was a benediction to that man. Was the cause mental or physical? Did it come through some internal storm that wrenched the two asunder—and there the parallel breaks down between the man and the old pine tree!

What was the secret of the constant return of life? That is the question of the Sphinx, and it's the most modern question of today. How much of our time is spent on the cause of the disease, I am concerned as I stand before you this afternoon, not so much in the disease, because countless thousands were attacked by the same disease and went down before they reached the age of fifty-eight; but what causes life to return to its fullness and to build the cellular life, such that I can stand before you today, apparently, Mr. President, in full possession of my faculties. (Much applause)

John Locke said it 250 years ago, "A sound mind in a sound body, is a slow, but full, description of a happy state in this world." There is nothing new for us to add to that. Two hundred and fifty years after it was stated, the question comes back to us, how to create or to produce the sound mind in the sound body and create a harmony that will give us perpetual life, even if we have to suspend in this world

and continue in the next. Higher education, Ladies and Gentlemen, is concerned more with the sound body and a sound mind, which means the harmony of body and mind; not the two at war. Mental disease is, in higher education, not receiving sufficient attention. Mental and physical tests today, though very imperfect and so imperfect that they can not be followed altogether, yet they are in the right direction. And a wonderful advance has come as a result of it. Higher education sometimes neglects the individual, but its tendency is to give study to the individual. Sometimes its results have been very fallacious. Something more than a hundred years ago, in the rise of modern public education, higher education gave sanction to this theory, that the more you can stimulate the intellect in the little child the more advantage will he have. As a result of that, of that theory, we gave rise to the infant school, and they took little children in school at the age of one and two years and gave them subject matter of adults, almost, and crammed them with book learning. And each country held up as a prize its precocious child.

In Norway, it was said that a two year old child could recite the history of every crowned head of Europe, could recite verbatim, almost, several chapters of the New Testament, giving a chronology of the world; and a number of other things it could do, that in France, they set forward one precocious child who could surpass the child of Norway; then in Hartford, Connecticut, we had a prize baby exhibited; it was a fad that ran for twenty years. Then higher education began to discuss the results, and after tabulating the effects, for twenty years, they learned that precocity was a disease more dangerous than curvature of the spine or any other child disease. For they said that all that were brought forward twenty years ago either today are dead or are in homes for defectives. Hence, the old folk story, that a child that is so smart, will hardly reach the age of manhood.

Froebel, one of the greatest philosophers that higher education gave to elementary education, spoke of the divinity within, which was the harmony of body and soul, and that it could be perfected and developed by the right kind of plays and games, and hence we have the kindergarten. Following that we have had a rise of physical education, in our higher institutions which even today are in their infancy, but argue well for the future. I wish to give you a little of the results here, of some of our experiments in our State College as a result of the establishment of our department of physical education. Every child, every student, entering is required to stand a physical examination, and his condition is charted and indexed, and at the end of the year we have undertaken to put beside this chart his scholastic record. And in the meantime we notify his parents if he has certain physical defects that should be corrected. This is interesting. We have had to drop this year around a hundred students because of a lack of scholarship attainments, a little more than eighty per cent of those that were dropped from college had diseased tonsils. And we are raising this question today, if we shan't require all freshmen entering who have any diseased tonsils to have them removed before we will permit them to enter col-

lege, placing the same emphasis on that disease that we place on typhoid and smallpox.

The second defect is malnutrition, the third is curvature of the spine, and a lack of coördination of body and limb. We haven't collected sufficient information to give anything like scientific results from the study that we are making, it will probably take five or ten years more to classify this material and reduce it to some kind of formula. But this is evident, that athletic strain, training, is becoming too severe, especially for the immature boy in college or in high school. So much so that the training received seems to have, not beneficial but an injurious effect. It doesn't apply to those who have reached a mature age, but down in the teens, the sudden change to very severe physical training is proving injurious. And we will be interested then to follow that, to see after the student has left college and returned back to a normal state of activity, whether the injury is permanent or whether life can return in its fullness and he be none the worse or perhaps better as a result.

The next thing that higher education is interested in, is in the diet. We are studying today vitamine contents, they are making tests in laboratories all over the country, and Ladies and Gentlemen, that is a very interesting study. There is practically nothing new in it, except the scientific application. Long before the classic age of Greece, vegetables it is said, came into use largely because of the medicinal properties which they contained; cabbage was used as a remedy for drunkenness, asparagus for digestion, beets for the blood, cucumbers for their healing qualities, and garlick was used to arouse the valor of warriors, which were fed just before going into battle, parsley gave the brain agreeable sensations, onions a health tonic, hyssop purified the blood, thyme was antidote for serpent's bite, ginger was good for scurvy, and asafetida was the chief seasoning quality (evidently tastes, as well as styles, have changed). That brings us then, if we are to study diet, to the study of the relation of soil and climate to health.

Julian S. Huxley, in the current *Atlantic Monthly,* discusses the relation of the chemistry of the soil to health. It contains some very interesting suggestions. In many parts of the world animals have a tendency to eat bones and carcasses of other animals because the soil is deficient in phosphorus and so are the plants in that area, hence dwarfed animals are the result. In New Zealand the missing element is iron. Animals suffer then from anemia, because the plants do not contain this element in sufficient quantities in the United States and Canada, and they have the swelling of the thyroid showing stunted growth. They say it shows a lack of iodine, and pellagra is on the increase in the south, due to an improper diet. Health may turn on the kind of pastures we maintain. It is an agricultural question as well as a health question. The animal feeding on the grass, the milk that goes to the children, the steak that goes to the table, may be deficient in the proper element—although the chambers of commerce may advertise that that territory is rich in a given quantity or quality.

It may be necessary to consider the kind of pastures we should have before the Live at Home Campaign can operate successfully with cotton and corn and tobacco, because we will put it on some other plane

than that of finances. Our diet is changing; less meat and bread, more vegetables and milk products and poultry products are being used. But is the soil capable of producing or supplying the vitamine elements that the food is supposed to possess? Because its the right kind of vegetable, because it is the right kind of vegetable I say, is no guarantee that the vegetable contains the vitamine contents even when the soil possesses it. A people or clan may pass away through a change of diet; Napoleon Bonaparte at Austerlitz was different from the Napoleon Bonaparte at Waterloo, mentally and physically.

I should refer to the relation of health to styles—but there are ladies present. Then, in conclusion, after these wandering thoughts which I have drawn from these notes, let me summarize as follows: Higher education if it is to make its rightful contribution, must be concerned through research and experimentation, as well as by instruction, with mental and physical defects, and the relation of the two, the teacher and the physician must form better coöperative relationships. Second, physical education and relation of health to intellectual progress is just coming under the microscope, we may say, for a study, and in years to come we may be able to understand something of the mental in its relation to the physical, and how one affects the other. Third, the relation of diet to the agriculture of a section of the country, and the relation of health to the industry of a country; the relation of the moral consciousness of people to a harmonious life of all of its citizens. These, Ladies, and Gentlemen, are topics that higher education should be concerned with, and we like to form a harmonious relationship with this fine organization. (Applause)

Chairman: The next speaker on the program, on the subject "The Influence of Public Health and Education Upon the Development of the Human Race," is Doctor W. L. Poteat, President Emeritus of Wake Forest College. (Much applause)

Dr. W. L. Poteat: Ladies and Gentlemen: Just as individual cells unite to form a tissue, and tissues an organ, and organs a system of organs, and systems of organs an organism, so we may think of individual persons uniting in a family line, and lines in strains, with a certain pigmentation, stature, and physiognomy, and strains in types, and types in races, and races, with progressive differentiation in isolation, issuing in species. There is as yet but one species of man. It is not probable that there will be others. For the forces which have moulded man into the primary races—White, Yellow-Brown and Black, with their daughter races—appear to have about expended themselves. Variations will continue to arise, but no new sets of external conditions are left unoccupied to favor and consolidate them.

The isolation which protected incipient variations against being dragged back into the ancestral type is isolation no more. The applications of science are leveling barriers, facilitating communication, and multiplying contacts, so reversing the conditions which favored racial differentiation. Even now you can drive no wedge into this human complex and split it into absolutely distinct units. High authorities declare that the races which we now recognize are unstable, mixed, and merge more or less with other racial groups. They are freely miscible,

and the assumed sterility, weakness of offspring, and ultimate extinction of mixed bloods must be dismissed as wanting scientific support. Accordingly, the stage seems to be set for another drama, as long as Bernard Shaw's "Back to Methuselah," wherein the common origin of the races of many will reassess its stabilizing power, and as the generations past reduce diversities as slowly as they evolved, and eventually draw back the far-wandered children into a common type again. One thing is clear and sure. The human stock is plastic. Like the whirling clay under the pressure of the potter's hand, it may be molded into forms of strength and beauty, admirable, noble in reason, infinite in faculty, in action like an angel, in apprehension like a god; or into forms of weakness and distortion. Of the same lump of clay, a vessel is made unto honor and another unto dishonor.

Another thing is clear and sure. The clay is variable in quality and temper. It is quite vain to insist that the only differences among the races are differences of opportunity and training. The brain of the belated groups are not of equal potentiality with the brain of the groups which have made the modern world. While diversities of racial physique are not of species value, some biologists hold that diversities of mental constitution are pronounced enough to warrant classifying them as distinct "mental species." And since the brain is the master tissue and mind the dominant organ of man, his excellency lies back of his brow, and the peril of degeneracy is there also.

Now, our topic requires us to consider the forces which play upon this plastic and responsive stuff of human kind, with especial reference to its improvement. In the ancient mythology the three Fates, who were daughters of Necessity, determined the destiny of men. In modern biology the three Fates become three Factors, which may be conveniently thought of as the three sides of the triangle of Life. They are Environment, Training, and Heredity. To you these are familiar conceptions, but for the sake of a point of view it may be of service to take a moment to recall them. Environment means the total situation into which one is born. It includes life's physical surroundings of climate, food, shelter; also the climate of opinion and sentiment, the intellectual and moral standards, social conventions—all the forces which play upon life from without. Training as here used covers all our activities, our work, our play, our intercourse. For our deeds determine us and our fellowships educate us. Even formal education is not so much reception as awakening. The contacts malevolent or gracious which we establish with our contemporaries or with our predecessors surviving in books awaken and draw us out. It is the active effort in response which constitutes education. And character conceived as the end of education is the sum of our organized responses.

Heredity is the third factor which determines the individual life. It is a process and a relationship by which offspring tend to resemble their parents, or resemblance based on descent. It supplies the substance of life, the material upon which the other factors operate. It ordains our inborn gifts and capacities, our limitations, weaknesses, defects. It sets the boundaries beyond which no favoring external conditions, no intelligence or assiduity of training, no passion of ambition is ever able

to transport us. And I remind you that environment and training affect only the existing generation, but heredity affects all succeeding generations. As another says, wooden legs are not inherited, but wooden heads are. Environment, training, heredity, these three, but the greatest of these is heredity. Suffer a word of caution here. Do not think of these factors as sharply distinct and independent much less as contestants in making or marring the human stock. Environment and training coöperate with heredity in producing any feature or characteristic of the organism. No characteristic is determined exclusively by the environment, and none exclusively by heredity. In the efficient organism it is essential to have the right materials, and these are supplied by heredity. But it is equally essential that these materials "should interact properly with each other and with other things; and the way they interact and what they produce depends on the conditions" (Jennings).

Add now to these complex interactions the eight or ten chemical regulators, the internal secretions, which control growth and development, and you face an amazingly intricate and baffling problem of analysis. You will lose not a little of the assurance inspired by the marvellous discoveries of some fifteen years ago. Permit me now to ask your attention to a curious fact. There appears to have been little improvement of the human stock within the historic period. It is Sir Francis Galto's judgment that two centuries of Athenian history (B. C. 500 to B. C. 300) made a larger contribution of men of genius than any two subsequent centuries. English as he was, he said that the Athenian race of that time was as superior to the present English race as the English race is superior to the present African race. Certainly the men of Athens eighty generations back of us set standards in philosophy, art, letters, and statesmanship which are the despair of all the later time.

Professor Conklin of Princeton has no doubt that human evolution has halted either temporarily or permanently. The human brain, which is the highest structure of the evolutionary series, has not increased in size since the time of the Cro-Magnon race, twenty thousand years ago. The prevalence of nervous disorders indicates that the nervous system is less harmonious and efficient than formerly, or that it is losing its power of adaptation to changed conditions. Witness, further, the increasing percentage of defect. In striking contrast with this apparently stationary biological inheritance, not to say racial deterioration, the social inheritance of the race has extended enormously in complexity and range. Man's world of activities, apparatus, body of knowledge, laws, institutions, has developed faster than man's capacities. A grave problem emerges just there. We have the machine, the weapon, but lack the wisdom and conscience to put them to right uses. We are not unlike our New Guinea contemporaries of the Neolithic age set down of a sudden on Broadway.

What is the explanation of this anomaly? I offer some considerations. In the first place, during all the lapsing centuries the emphasis has been strong upon environment and training, slight or nil upon heredity. The difference between the old world and the new relates to environment and training. Civilization itself connotes the improvement

of these two external factors. We have forgotten the type of manhood and womanhood to which alone the significance of any civilization is due. When they showed the eminent historian Renan through the brilliant corridors of the Paris exposition and pressed him for his impression, he said, "I have been thinking how many exquisite things there are that we can do without." And then—you must allow me to say it—one of the invincible obstacles to race improvement is doctors. It is true, according to Pliny, that Rome got on without them for six hundred years, but that easement was local and transient. You see, in cases of weak or degenerate stock the doctoring has been palliative, not remedial and preventive. Of course, care and relief are as noble as necessary, but they are costly and superficial as compared with the efforts to forestall. Doctors and nurses and hospitals, at once the token and crown of civilized life, have intercepted the law of natural selection, which under primitive or barbaric conditions would have eliminated weak and degenerate stocks. You receive the weaklings and skilfully nurse them up to maturity, when by the neglect and ignorance of society they are allowed to multiply their kind endlessly. Beside this pollution of our best blood, which is our most precious possession, it has been spilt by the hogshead to fertilize crops in silly and criminal wars.

Again, there has been a conspiracy of silence on this fundamental matter by all the agencies of enlightenment, the home, the school, the press, the church. For the most part it has been curtly dismissed as "not nice," as a fad in vulgarity. The superstition that a certain percentage of disease and defect registers the decree of Providence has been influential. The canker and tragedy of the social evil has been condoned as "necessary," humanity rots at the roots and we acquiesce. It is further said in justification of this silence that there is peril in bringing the phenomena of sex into the focus of attention. Better let sleeping dogs lie. Moreover, the attitude of reticence and mystery in regard to the physical basis and connotations of love refines it to a spiritual attraction and decorates it with the embroideries of sentiment and romance. To open out its evolutionary history and its hereditary issue can only degrade it and turn a herd of swine into life's holy of holies.

Now at length, however, this conspiracy of silence is broken. The Imabeth Conference of Anglican bishops declared in 1920 that the time for such a policy on such matters was gone. A discreet book for the guidance of young people held up as obscene the last month in a Massachusetts court has been released as legitimate. Public health agencies have at last found their voices, and their bulletins of information will exert their most important influence, not in showing people how to destroy wiggletails and to feed babies, but in educating them about babies with a better heritage. We have seen the peril of feeble-mindedness and insanity multiplying under the cloak of silence. Nearly two million of our people need institutional care. One-half of these defectives owe their defects to heredity and unrestrained will and reproduce their defects in geometric ratio. Five million of us are unable to master the primary grades of the public schools. Twenty million are capable of only superintended labor. This scrub stock and the progressive degen-

eracy of the race which it prophesied presented a social emergency before which no social convention could stand. And the dogs were found not to be asleep. Innocence was already violated by an underground system of education—ignorant nurses, the gossip of unclean and misinformed companions, quacks, and patent medicine venders, sex books, and personal adventures.

Allow one other consideration. While the size of the American family has been declining since the eighteenth century, enough babies are now born for our increasing native population. The insistent question is, "Born, but in what homes?" The upper grades of capacity are not maintaining themselves; the lower show an amazing fertility. The graduates of Harvard have .7 of a child on the average; of Vassar .5. A feeble-minded couple has an average of seven children. At this rate, two hundred years hence a thousand Harvard graduates will have fifty descendants, but a thousand Roumanians of Boston will have one hundred thousand. Recent biological opinion appears to favor general birth control as the only effective corrective of this menacing differential birth rate. It remains to ask what is to be done for the improvement of the race. The answer is easily made, but its practical application is thronged with difficulties. It is a commonplace of practical biology today to control heredity for the improvement of the stock of animals and plants. This has been done by selective breeding. The question is whether a like care and method would work in the case of man. There is now no doubt among men who have right to an opinion on the matter that while man walks at the head of the animal procession, he belongs to it, and that the processes and laws of heredity observed in the lower orders of life are operative in him.

Some persons like Gilbert Chesterton and Bernard Shaw and some newspapers make merry with the science of Eugenics because they do not take the trouble to inform themselves. It is not free love, or trial marriage; it is not killing off weaklings, not breeding people like pigs and poultry. It has no program. It is merely the study and guidance of the agencies within human control which will improve or impair the inborn qualities of future generations. Positive eugenics seeks to promote the increase of the best stocks, negative eugenics seeks to promote the decrease of the worst stocks. With all our lately acquired knowledge, I do not think we are ready to undertake selective mating of the fittest for race improvement. Beyond question we are ready for restrictive mating to eliminate the obviously unfit. Care for the feeble-minded, the insane, the epileptic, the inebriate, the congenital defective of any type, the victim of chronic contagious disease, care for them with intelligence and humanity, but deny them, in one way or another, rigorously and inexorably the opportunity of perpetuating and multiplying their kind to the inevitable deterioration of the race. (Much applause)

Chairman: I know you all enjoyed that speech as much as I did. The next speaker on the program is a man whom most of you know already and he needs no introduction. Dr. Charles O'H. Laughinghouse, State Health Officer, Raleigh, will now present "The Social and Eco-

nomic Aspects of Human Ailments and Public Health." Dr. Laughinghouse.

Dr. Charles O'H. Laughinghouse: Mr. Chairman, Ladies and Gentlemen: The subject submitted is part and parcel of a symposium chosen by the Chairman of the Section on Public Health and Education and delegated to the State Health Officer for presentation. The social aspects of human illness and public health embrace more or less all the satisfactions and dissatisfactions of human life. This statement is so apparent, because of the fact that human illness enters so constantly into the thread of events which make up individual and collective life, that for lack of time we will forego further allusion to the social aspects of our subject, leaving it to others who will complete the symposium.

The economic aspects of human illness and public health cannot in my humble judgment be more intelligently portrayed than by: (a) Arriving at the economic value of men en masse; (b) indicating the cost of disease; (c) presenting the salvage which can come to society through the practice of disease prevention and through the promulgation of public health activities. The social aspects of the subject will compel the admission that life and health have a higher value than money, in that it gives value to all things else. Life and health are ends in themselves—the conservation of both needs no justification. One cannot, however, make clear the economic phase of human illness except by the presentation of the subject on a financial basis. As gruesome as it is admitted to be, I shall attempt through the portrayal of the work of other men to discuss at least one narrow aspect of life, namely, the actual cost of maintenance on the basis of dollars and cents. Having done this, I will undertake to show the potential productive value of human beings themselves at only three periods of life, and, lastly, it is my purpose to give you a glimpse of the economic salvage that has come to the world through the practice of disease prevention and public health.

We Americans habitually emphasize the importance of our national wealth in terms of real property, machinery, manufactured products, natural resources, and so on. So centered have we been upon this, that we have seemingly forgotten that human life is after all the nation's greatest asset. We have not quite appreciated the economic value of human beings and their health. Of course, when earnings cease through illness and expenses mount because of same, individuals affected thereby give concern to the individual problems. When the bread winner of a family is removed through accident or disease and the family has to become self-supporting, the individual family and perhaps the individual community comes to know the individual economic loss which has been sustained by the individual family and the individual community. But in the aggregate, in viewing our human resources as a whole, we have not yet come to appreciate the economic features contained in saving human beings as a whole from disease, nor have we come to the full understanding of what a profitable investment, nationally speaking, life conservation is. In other words, what does it cost to bring up a child to the age of eighteen, or to the age when the child comes to be self-supporting? What are the future earnings of that child after he is

weaned from his family and from the paternalism of the State? A cross-section of the average wage earning families in America shows that the cost of rearing a child to the age of self-support including food, shelter, clothing, education and so on is $7,238. If we include the interest on the capital, and if we make allowance for the children who do not survive the age of eighteen, the amount is increased to more than $10,000. This does not include the money value of the mother's care, although we recognize that the working mother makes a real financial contribution to the family's maintenance.

Child rearing is an industry in which capital is invested by parents and the State, which capital is destined to produce future returns not to the family so much as to the State itself. Therefore child rearing has come to be the State's chief concern. Normal, healthy adults not only produce a market for the State and nation's products but in addition they produce vastly more than they consume and in their production add to the taxable values in the way of real property, tangible and intangible in the communities where they live. It has been computed that the value of the future earnings of a normal individual at the age of eighteen on through life is well in excess of $41,000 and the expenditures essential to the necessities of existence for that individual are less than $13,000. So that the economic worth to the community of a well adjusted human machine at the age of eighteen is well in excess of $29,000. This applies to the wage earner whose income is estimated to be $2,500 a year. The maximum value of this particular human machine in this particular wage earning class is reached at about the age of twenty-five and is in excess of $3,200. His earnings decline as the years advance, until at the age of seventy they cease. A child born in this class of society is worth to the State $9,333. It costs money to raise this child to the age of self-support, but when the child begins to work, it produces more than it consumes. The sixty million productive males in the United States have a future net earning capacity of more than a trillion dollars.

Now there are more than 8,500,000 gainfully occupied women in the United States, which, when added, makes the additional sum of five hundred billion dollars, so that the total human assets, if audited and valued from a standpoint of future earning capacity, will bring the tremendous and staggering sum of one trillion, five hundred billion dollars. In 1922 our national wealth in material assets was three hundred and twenty-one billions of dollars. So, if our calculations are correct, our human capital exceeds our inanimate wealth by about five to one. Having obtained an idea of the actual value to the United States of its human machines, let's see what we are losing because of sickness. According to Frankel and Dublin the average individual spends one-fortieth of his time in bed because of incapacitating illness. The average worker loses 2% of his time, a fraction more than seven days a year, because of incapacitating illness. One-fortieth of the population is constantly ill to the extent of being bed-ridden. Extensive and reliable studies indicate that where one is incapacitated, there are at least two physically impaired to the extent of from ten to fifty per cent of their efficiency, which is to say that for every thousand people, there are fifty who

suffer from prevalent and chronic diseases, which completely incapacitates them for a small part of their duration. For example, tuberculosis, cancer, heart disease, vascular disease, chronic indigestion, gallstones, kidney stones, hernias, unrepaired injuries following child birth, and so on. The annual expense to the people of the United States for medical service, if itemized and totaled, would read about as follows:

150,000 physicians @ $3,000 per annum	$ 450,000,000
140,000 private duty nurses @ $1,500 per annum	210,000,000
150,000 practical nurses @ $1,000 per annum	150,000,000
100,000 attendants @ 1,000 per annum	100,000,000
50,000 dentists @ $3,000 per annum	150,000,000
7,000 hospitals, with a total of 860,000 beds	750,000,000
Druggists for medicines	700,000,000
25,000 healers, chiropractors, osteopaths, Christian Scientists, etc., @ $2,000 per annum	50,000,000
Grand total	$2,560,000,000

The people of the United States, it will be noted, are paying for the treatment of disease not less than $2,500,000,000 a year, or ($2,500,000,000 ÷ 120,000,000 population) $20.83 per capita, or approximately $100 per family. The average wage-earner's family, according to studies conducted by the U. S. Bureau of Labor Statistics, pays $60.39 a year for medical services. The average farmer's family, according to studies conducted by the U. S. Department of Agriculture, pays $61.60 a year for medical services. The average family represented in the clerical personnel employed by a large insurance company pays $80.00 a year for medical services. In addition to the expense for medical services imposed by disease, there is an estimated annual loss to the people of the United States of $2,000,000,000, as a result of decreased wage-earning capacity. And there is a still further loss of permanently interrupted wage-earning capacity through postponable deaths, estimated to be $6,000,000,000, making a total annual cost of disease to the people of this country $8,000,000,000 for medical services, plus $2,000,000,000 loss in wage-earning capacity, plus $6,000,000,000 death losses—a total of $16,000,000,000 a year. The total annual income of the United States is about $90,000,000,000. Any service which costs as much as medical care and which is absolutely essential to both individual and national prosperity and happiness, raises at once the question of the ability of the people to pay for it. The income of the people of the United States, according to Leo Wolman, quoted in *The Survey* for June 15, 1927, was as follows:

6% of families, annual income in excess of $2,900.
90% of families, annual income under $2,000.
67% of families, annual income under $1,450.

As staggering as these figures are, they do not cover the total cost, to-wit, the sickness causing premature death, the sickness removing individuals in their prime when they have tremendous productive value.

Now let us come to the economic value of preventive medicine and public health. Practically one-third of the deaths that occur every year are preventable. The great bulk of preventable deaths are in infancy and childhood. More than 120,000 babies died from preventable diseases last year. There is no reason for this except the indifference of individuals who control the community in which these children live. Mothers will save their babies if given a chance. Would that the physicians of the country could make the legislators in their own particular communities understand that babies have a dollar and cents value of more than $9,000 if they are boys and $4,000 if they are girls, and that capital lost throughout the country from infant deaths alone, which could be prevented, is more than seven hundred and fifty million dollars. Every year more than 30,000 young men and women between twenty-five and twenty-nine years of age die from entirely preventable causes and their capital value, having in mind their future net earnings, is more than seven hundred and fifty million dollars. Having due regard for the value of human life at each age period, it has been estimated that the total capital value of lives which can be saved annually through the application of preventive medicine and public health in the United States is well over ten billions of dollars. Now let's bring this problem home. Every year in North Carolina there are in round numbers 6,500 deaths of infants under one year of age—half of them are males, half females. In the death of the males we lost last year 3,250 times $9,333; in the death of females 3,250 times $4,666, which in the aggregate is a loss to the State of $45,496,750 caused by the death of infants under one year of age last year.

We find in North Carolina the number of deaths of males at the age of eighteen is 125, and the average number of deaths of females at the age of eighteen is 125. A male at the age of eighteen has a future earning capacity of $30,000; a female a future earning capacity of $15,000. One hundred and twenty-five times $30,000 is $3,750,000; a hundred and twenty-five times $15,000 is $1,875,000—which gives us a total of $5,625,000, combined net future earnings. The average number of males dying in North Carolina at the age of 25 is 250; females dying at the age of 25 also 250. Multiply 250 by 32,000 and we have $8,000,000. Then multiply 250 by 16,000 and we have $8,000,000. Then multiply 250 by 16,000 and we have $4,000,000. This totals $12,000,000. Now add the loss from deaths of one year of age $45,496,750.00, the loss from deaths of 18 years of age $5,625,000.00, and the loss from deaths of 25 years of age $12,000,000.00, and we have $63,121,750.00. One-third of these deaths are preventable. The State actually lost last year by death in only these three age groups $21,040,583 plus. The average family spends yearly $80 on sickness. We have approximately 600,000 families in North Carolina. This multiplied by $80 amounts to $48,000,000. Two per cent of our population is sick all the time, which means that 60,000 people in North Carolina are sick 365 days in a year. To care for this sickness it takes in North Carolina two thousand physicians at an average of $3,500; 700 dentists at an average of $3,500 a year; 1,000 nurses at an average of 1,500 a year; 600 nurses doing private duty; 5,000 midwives; 800 orderlies; stenographers; as-

sistants in hospitals and offices of private physicians; druggists; drugs and sick room supplies; patent medicines; osteopaths; chiropractors; Christian Scientists; faith healers; neuropaths and so on, and so on. And to this we will add the loss of time of the sick people and their families and we can easily see that sickness costs this State more than $50,000,000 a year.

Lastly, we come to the salvage to society through the practice of preventive medicine and the promulgation of public health. We have conquered epidemics of serious import with the exception of influenza. In 1875 the death rate was 28.3 per thousand; in 1925 it was 11.5; and in 1880 the average life span was about 40 years; it is now nearer 56 years. In 1901 a baby born in the United States registration area might expect to live 49.24 years—this expectation of life has been extended to 57.74 years. The diseases which have been most reduced are those which affect infants and young children. Infant mortality has been cut sixty per cent in the past twenty years. In the past, nearly 25% of the babies did not survive the first year, only about 7% die today, and two-thirds of this 7% will be prevented in the near future. In 1900 the death rate from typhoid fever was thirty-six per 100,000 in the registration area. This disease is now not far from extinction. Diphtheria is on the point of being wiped out. In 1900 it had a death rate of 43.3 per 100,000. In 1926 this death rate was reduced to 7.5.

The most striking demonstration of the effectiveness of public health work is the experience of the Metropolitan Life Insurance Company: Seventeen years ago, it instituted a program of health education and nursing service for its working class policy holders. It has expended over $20,000,000 in this line of work, and in seventeen years it has decreased its mortality rate more than 30%. The accumulative saving to this one company in mortality between 1911 and 1925 has totaled the amazing sum of $43,000,000. During this period of their demonstration the death rate from tuberculosis among the industrial policy holders has been reduced over 56%; the typhoid fever reduction is 80%; the communicable disease of childhood reduction is 55.5%; the reduction from diphtheria alone being 62%. In every important condition the death rate has declined among the industrial policy holders twice as fast as it has declined in the general population. The expectation of life has among these industrial policy holders increased by nine years, since 1911. Whereas the corresponding increase in the general population has been about five years. Health work when properly undertaken and adequately financed pays by every test of this business organization.

The efforts of preventive medicine directed to the prevention of typhoid fever in North Carolina has saved the State $215,000,000 since 1914. In 1914 North Carolina had 3,260 deaths from tuberculosis; in 1928 it had 2,244 deaths from tuberculosis. If the same death rate from tuberculosis in 1914 had continued through 1928 we would have had 14,224 deaths from tuberculosis which we did not have, which means a saving in the net earnings of males and females at the age of 18 of $309,401,000. North Carolina is spending today less than forty cents per capita in preventive medicine and more than $15.00 per capita on cost of sickness alone, one-third of which sickness is preventable.

In 1920 there were 603,683 males twenty-one years and over in this State; and 607,044 females twenty-one years and over. According to the estimates above mentioned we would have $20,000 earning capacity apiece for the males and $10,000 earning capacity apiece for the females; and according to this, the total worth of manpower in North Carolina ten years ago, when our last census was taken, would reach the gigantic figure of $18,144,300,000; while the material wealth in 1920 was only $4,543,110,000.

The achievements in the field of Public Health have completely changed the surroundings of the average citizen in the United States. They no longer live in dread of plague, cholera, yellow fever, virulent smallpox, typhoid fever and a host of other horrors. Did time permit, we could with profit look back into the days when plague, pestilence and famine were rife in the world. We have but to go back to 1914 as far as North Carolina is concerned, when the population of the State was less than 2,000,000, and find where we had 839 deaths from typhoid fever, the disease giving a death rate of 35.8, while in 1928 we had 185 deaths with a death rate of only 6.3. If the rate of 1914 had continued up to 1928 inclusive we would have had 10,000 deaths from typhoid fever which we did not have. Figuring these deaths at net future earnings of $29,000 for males and $14,500 for females, we would produce the enormous sum of $214,368,000 saved the State from one piece of work alone, namely the prevention of typhoid. Take tuberculosis; North Carolina had in 1914, 3,260 deaths from this disease. In 1928 we had 2,240 deaths from tuberculosis—the saving of 1,016 people and their potential earnings last year. If the same rate had continued during the 14 years from 1914 to 1928, we would have had 14,224 deaths that we did not have—a saving to the State in the net future earnings of males and females of $309,401,000.

The elimination of accidents would add more than a year to the average expectation of life. A goodly proportion from heart disease are preventable, which prevention would add appreciably to the span of life. The same may be said of arterio sclerosis, and cancer. If we were but willing to utilize and if we would but finance ways and means to put preventive medicine into actual practice, we could easily raise the expectation of life from 58 to 65 years. We are confronted with a real situation. We know how great is the value of human life. We know the current losses from sickness and death. We have the knowledge and resources necessary for the control of disease. Obviously, if we are governed by knowledge we will immediately undertake to more consistently and meticulously avail ourselves of the advantages of disease prevention. Today Public Health Work is really in its infancy, the public is coming to see and know that less than fifty cents per capita represents the total expenditure for public health, while more than fifteen dollars per capita represents the money spent for medical service, which money is directed to the alleviation of disease and not to its prevention. The prevention of disease is a purchasable thing. Money invested in the business will bring untold dividends, not only in dollars, but in happiness and in the joy of living.

Dr. Fletcher Harris: Mr. Chairman, I want to say that we have

been wonderfully blessed here this afternoon. This old earth of ours had only one sun, but we, this afternoon, have had four sons. And they don't need to talk much to impress us or anybody else; they are sons, and a sun don't have to say so much, he just shines, and they shine this afternoon. And they have been shining on me and I hope to have some reflected light. I am the moon. My wife says I am loony, and I expect you all agree with her. Now, just one more thing I want to say; the first essay, I think it was fine. If I am not mistaken, the speaker said education makes men different. Well now, my wife says I am different from any man she ever saw in her life, and I think she is telling the truth. That is encouraging to me. I went to school for many years, in my former state, and to the University of Virginia. I left there feeling that I didn't know anything, and I felt until this afternoon that I didn't know anything. But, bless my life, Professor Allen, Superintendent of Public Instruction of this State, I believe it is, has encouraged me wonderfully, by telling me that education makes men different. I wonder if I am educated; I just wonder. Now one more thing and I am through. Another evidence that I am educated, I think it was the first essay brought out, the speaker said education makes men participate in everything, and I certainly participate in everything I can. I thank you sir.

Dr. Charles Allen: Mr. Chairman, I think we all are interested in the welfare of North Carolina, and I do not know of anything that would mean as much for North Carolina if we would keep ringing it in the ears of every doctor, the speech of Doctor Poteat and then could get the doctors to do something about it. The last Legislature passed a law in which it gives the county boards of health the right and the opportunity to sterilize the imbeciles and other mental defectives in its county. I have talked about this thing at several medical meetings to different doctors and they seem totally uninterested in the subject. Why many of the doctors say its the natural course and let it take its course. I have recently had in the past two years to come in to me a man with a child that had hernia. He brought the child from over in Chesterfield County, South Carolina, just across the line from where I am, and I investigated that case and found that from his grandfather there were sixty-six imbecile children. Another thing that is surprising to me, and that is when we talk of the fact of sterilizing, a lot of doctors have the idea in their heads that you remove the testicles or the ovaries. It is a simple thing to sterilize the male, and I have done it in the hospital with which I am connected, and let them go home. You sterilize the males in ten minutes and you would be surprised if you talk to the families where they have imbeciles, how willingly they will elect to have them sterilized. Another thing is that among the people generally, they think that it has some effect upon their sex lives, but the sterilization operation has no effect whatsoever upon the sex life of the patient.

I was talking to a doctor sometime ago and he told me that in one of the institutions in this State they had cared for imbecile children born from the inmates in that institution. And this is an exceedingly important thing when we go ahead and try to take care of all of these imbeciles and children that are born with birth paralysis and one thing

and another, and we do absolutely nothing in the preventing of it, and we talk about the cost of it and what it is to save a lot of people, but nothing is done. If we will go ahead and sterilize these people when they are willing to have it done, then we are getting somewhere. And another thing, you can not put any trust in anything except surgical sterilization; all of these other sorts of preventions of conception are not worth anything, unless they are used by the people of the highest intelligence. And in the sterilization operation in women it has no effect upon the menstruation or the sex life of the patient, and the operation can be done under local anesthesia. Of course, it's a little more serious than in the male, but it's not serious enough to amount to anything. There has been over thirty-five thousand cases sterilized in California without a single fatality from it. I have sterilized twenty-two women, not for this condition, but for other conditions, and in which we did not have a particle of trouble. Then another thing, we have had to come in to us women suffering with heart disease, with tuberculosis, some of them with epilepsy, women of a low strata of life, who have had a number of children; they come in and we look them over and we say, "You ought not to become pregnant again," and we sit down and talk the thing over with them. Now, the only thing to do for these people is to sterilize them, surgically, then you do something for them that is some good. It is far less dangerous to perform this sterilization on them than it is to wait until they become pregnant and then perhaps perform therapeutic abortion on them. And, gentlemen, if we doctors would take this thing to mind, and you have a law that permits you to sterilize these people in each county, and the county will pay you for the doing, if you will but take this thing in mind, this surgical sterilization will do a wonderful lot of good. And I believe that as soon as the people know that it has no effect on their sex life at all, why you will find that these operations on defectives will be easy to handle. If you will explain to them that the surgical sterilization of a person does not ruin them for sex life, that it actually improves it, then you will be doing a service.

Dr. A. J. Crowell, of Charlotte: Mr. Chairman, just one moment. I have attended the North Carolina Medical Society Conventions, with exception of possibly two meetings since 1892, and I usually listen very attentively to papers and discussions, but never in my life have I heard such wonderful papers as I have heard today in the North Carolina Medical Society Convention, this morning and this afternoon. I think that we should give Dr. Bonner a rising vote of thanks for this wonderful program he has given us this afternoon, and I suggest that we do that right now. (This motion was duly seconded and carried.)

Chairman: If there is no further discussion, this meeting is adjourned.

SECTION ON PRACTICE OF MEDICINE

Dr. W. B. Kinlaw, *Chairman,* Rocky Mount

TUESDAY AFTERNOON SESSION—APRIL 29, 1930

The Section on Practice of Medicine of the Medical Society of the State of North Carolina was called to order at the Carolina Hotel, Pinehurst, N. C., at two-fifteen o'clock by the Chairman, Dr. W. B. Kinlaw of Rocky Mount.

Chairman Kinlaw: We are a few minutes late in getting started. We have seven papers on this program and we want every man to read his paper. The papers are to be followed by discussion. There will be a lot of information brought out in the discussion which probably will not be taken care of in the paper.

This Section covers fairly well the Practice of Medicine and we are anxious to get started now.

The first paper is by Dr. Spruill of Jamestown, on "Cancer of the Lungs." Dr. Spruill.

CANCER OF THE LUNGS

Dr. Jos. L. Spruill

Dr. Jos. L. Spruill (Jamestown): Mr. Chairman, I haven't any paper, and I have no excuse to offer for it. I wish to present to the Society some pictures of a few cases I have seen in my work and hope somebody else knows something about it and has studied it. We all know a cancer of the lung is comparatively rare, but I doubt if it is as rare as most of us think. It has been rather rare in my experience. I have found six cases of metastatic cancer and one case of primary cancer in over five thousand examinations during the last seven years. It is these that I want to show you today.

Dr. James Alexander Miller of New York reports thirty-two cases of primary cancer. He also shows a number of X-ray pictures of those cases. None of them have the same characteristics as those I am going to show you. Whether or not the metastatic cancer or secondary cancer shows a different picture on the screen from the primary cancer, I do not know. I have seen but one case of primary cancer. The symptoms of the disease are by no means dogmatic. In fact there are very few of the symptoms of cancer of the lung in those that I have seen, very few of them that differ very much from the ordinary case of affection of the lung, notably tuberculosis.

You have practically the same symptoms—cough, expectoration, pain, some emaciation and hemorrhage. You have all that in tuberculosis patients. A little more than 50 per cent of my cases have hemorrhage, more or less. None of them had hemorrhage to any amount, just a few ounces, but practically all of them had pain and tenderness

along the latter part of the disease. Numbers of them had shortness of breath due to pressure symptoms. As I said before, you cannot figure on those symptoms for diagnosis.

One of the most important things I found in making that diagnosis is the patient's history. Every one of the patients of metastatic cancer that I found gave a history of a previous operation for some trouble. By digging into those cases we find that often they did have an operation for cancer, notwithstanding the fact that there are so many people who will report an operation, but do not know the exact nature of it. Particularly is that so of women. You get a history of a woman and she will tell you she had an operation for female disease. That is all she knows about it. Having gotten that history and then having made an examination and failing to account for symptoms by the physical examination, we can then get back in many instances, I think, to metastatic cancerous growth.

There is nothing typical about the physical examination. In most of the patients that came to me with their complaints, I could find very little in the physical examination upon which to base a diagnosis. A thing which I found in those rather far advanced was impairment or percussion. Those things you can bear in mind when making the diagnosis. As to prognosis it is very grave, of course. With the improvement in surgery of the thoracic region, it is to be hoped that by making our diagnoses early we can do something for the suffering. Particularly is that so with the use of the bronchoscope.

(Slide) Here is a picture of a man 42 years old, sent to me from Salisbury with a diagnosis of a tuberculous testicle. About eight or nine months before this picture was taken he came with just a few symptoms in his chest, some cough, expectoration, and suffering a little pain, but not much of anything. I could find nothing either by the X-ray picture I took previous to this or on physical examination on which I could base the diagnosis of pulmonary tuberculosis, yet I felt there must be some. I concurred in the diagnosis of the tuberculous testicle and sent him to Baltimore, to the University of Maryland, where his testicle was removed on the same diagnosis. When the pathologist made his report, it was carcinoma instead of tuberculosis. The man came home and about nine months later came back to me for an examination. At that time his glands were very much enlarged, very tender and he was complaining more or less of cough and tenderness about his chest. This is what we found at that time. I am sorry that isn't more clear. You can see the rounded parts in the chest. There was no question in my mind about that being a metastatic cancer of the lung. The man died a short time after that.

(Slide) This is a woman 43 years old. She came in with a history of the removal of the right breast for cancer. She gave a history, symptoms of cough, expectoration and some hemorrhage, having coughed up just a small amount of blood occasionally, but not any great deal.

We find here the same condition, that rounded appearance of those cancerous parts. The thing to which I wanted to call your attention particularly is in the secondary cancers, which all of mine are, we had

that appearance. In those of primary cancer reported by Miller, only one case showed anything like that.

(Slide) This is another case of a woman, 45 years old, a case of amputation of the breast, giving practically the same symptoms that the other one did, except she had no hemorrhages. She did have a marked tenderness over this dull percussion on the right side where the cancer showed. She died in a short time after that.

(Slide) Here is a woman 48 years old, the mother of several children, who gives a history of having been operated upon, so she says, for female disease. That is all I can get. What the conditions were we did not know. She had a marked cough, marked tenderness, some hemorrhage and shortness of breath. I made a diagnosis of carcinoma and got in touch with her doctor. He told me that nine months previous to this he had amputated her cervix for carcinoma, so that is another case of metastatic cancer.

(Slide) This is a case of a woman 57 years old. She came into the clinic suffering with almost everything that would show a far advanced case of tuberculosis, but giving a history of having been operated on for tuberculosis of the tibia. Later she went to the hospital and had an amputation done and it was found that she had a cancer instead of tuberculosis. Here is the picture. Both lungs are involved. I wish they were clearer so you could see how well-marked they are. In this case I referred it to a roentgenologist for X-ray treatment which he gave with no result. I might say we hardly know what to do in a case of that kind. In his reports, Miller says there is no use. We couldn't get any result from it.

(Slide) This case is particularly interesting to me. This is a man 48 years old. Two years previous to his coming to me he went to one of the surgeons in Greensboro with an enormous mass in his abdomen practically filling the whole cavity. The surgeon made an exploratory incision and found it was inoperable. The growth filled the whole thing. He took a section of that and sent it to Hopkins Hospital. It came back with a report of carcinoma. That was two years previous to this. He was referred to Dr. Shohan of Greensboro, a roentgenologist, who gave him X-ray treatment.

(Slide) After 28 days of treatment here is what we have in the same case. I wish to say, by the way, that he treated him previously for this tumor in his abdomen, and after a short while it all melted away. There was none left and none returned. A year or two after that he came to me with this chest condition. He was treated and this is the result in 28 days after he had begun his treatment. Since that time the man is entirely well so far as we know. He is making his living today and enjoying life.

By the way, Dr. Shohan is present now. Doctor, will you discuss this case? That is all I have to say about it.

Dr. Jos. Shohan (Greensboro): I don't know that I can add anything. I think this picture was taken in 1927. Four or five years previous he complained of some abdominal condition. At that time I think Dr Lyons and Dr. Sharp both had him in charge, and he was referred to the hospital for full observation. He had the impression that

he was going to be operated upon so the next morning before six-thirty when his wife called on him (it was the time of the horse and buggy age) he took "French leave" of the hospital and left. Everybody apparently lost track of him.

A year later he turned up with some large abdominal mass. That was diagnosed as some intraperitoneal tumor for which surgical interference was necessary. He was suffering so much that he consented to the operation. Dr. Ogburn of Greensboro opened him up and found a large mass popping out from the peritoneum, a mass the size of a child's head. Of course, he was sewed up and told to go home and make the best of it, to arrange his affairs, sell his farm if he could and die in peace.

At that time (it was shortly after I settled in Greensboro), I aired around among the doctors what can sometimes be done with X-ray therapy. Someone suggested he had better see me about it to see whether I might prolong his life long enough for him to harvest his last crop. He came to me very much cachectic—a big, strong, strapping man of about 6 foot 2 inches, weighing ordinarily about 195 pounds. He weighed about 150 pounds at the time. His clothes were hanging on him. He was yellow, cachectic, had a dry tongue. He was possibly suffering more from the mental agony of awaiting his doom shortly than anything else. He asked me whether I could do anything for him. I said nothing could be promised, but I would try. He had a very large abdomen. If he were the other sex I would have thought it was pregnancy.

I began to shoot into him deep X-ray radiation in tremendously heavy doses from every possible angle, and the thing disappeared, melted away like snow in the hot place. He made a very good recovery and went about his business. I warned him that it would probably return and that he must keep track of me.

A few months after that (I am sorry I haven't the date, but I did not expect to intrude upon the doctor's time and your time) he appeared with some masses in the groins. I turned the tube on him for the second time on those masses and they disappeared. Shortly after that I advised him to take a prophylactic series of treatments for the abdomen. He did and got along very well for about a year. The next year in the winter he caught cold. He was taking all kinds of cough medicines that he picked up from the drug store and he did not come to me at all. He didn't think it necessary. Then he fell into Dr. Spruill's good hands. I don't know who referred him.

Dr. Spruill found a large tumor on his chest. Dr. Spruill and others knew what I had accomplished for the man in his previous difficulties and he was referred back to me. It required tremendously heavy doses and they made him very sick—so much so that he could not travel back and forth. He lives a short distance from Greensboro. I took him to the hospital even too sick to continue his treatments. He was practically dying. His wife and brother said that he was dying anyway, so what was the good of giving further treatments? I persuaded them and him to continue the treatments.

Just then, fortunately for him, he started to improve another time.

The masses disappeared and 26 days after the first treatment they had practically all gone. He left the hospital in fairly good health. That was three years ago next July. Since then he has had no more treatment and has harvested three crops of tobacco and cotton. He is an active dairyman, a strong, strapping, healthy man enjoying life.

His only grudge against the medical profession is that it does not give him insurance. He is after insurance and sees no reason why he should be declined insurance. He thinks he is entitled to it. He asks me when I see him whether I think he is going to get insurance.

I occasionally look at him in the fluoroscope. Just a few months ago I did. I think the shadow is even smaller than in this picture. Here in the diagonal position you can still see a certain amount of blurring in the mediastinal space. Now even that shadow disappeared. It is perfectly clear. I don't believe there is any trace of the tumor unless from the previous growths. I thank you. (Applause)

CHAIRMAN KINLAW: Dr. Spruill's paper is now open for discussion. Dr. S. M. Bittinger of the Sanatorium will open the discussion.

DR. S. M. BITTINGER (Sanatorium): Mr. Chairman and members of the Section: This has certainly been a very interesting talk and the pictures Dr. Spruill has shown us were very interesting as well as the discussion by Dr. Shohan.

As Dr. Spruill mentioned, carcinoma of the lungs, while it is a rare condition in considering other diseases it is really not uncommon. I am referring to the same line of thing that Dr. Spruill did in which Dr. Miller has probably brought the subject of primary carcinoma of the lung up to the most modern ideas in the very able discussion and pictures.

About one per cent of cancer in general is pulmonary and it causes about two per cent of the deaths from pulmonary diseases. While it is not so common, it is not uncommon, either. There is no question in my mind but that a good many cases of cancer of the lungs are never diagnosed, that is, primary.

The secondary type of cancer, of course, is more common and some cases of primary cancer, without any question are secondary. Sometimes the primary focus, you might say, the primary lesion from which this metastatic growth occurred in the lung is not found. There is some hidden (you might say) organ of the body that is not diagnosed. Oftentimes these cases are never autopsied and the primary cancer growth is never discovered.

Up to the present time the prognosis in these cases has been absolutely poor. There has been practically no hoped-for recovery and it really is that now. However, as Dr. Spruill has mentioned, with the advancement of thoracic surgery and that branch particularly known as the bronchoscopic surgery and examinations, occasionally an early case has been diagnosed and been cured. We speak of that in a relative sense.

Two or three years ago I attended the American Medical Association meeting in Washington. I heard Dr. Jackson report on two cases in which the cancer started in the endothelium lining the bronchus. In other words, bronchial carcinoma and growth occurred in the bronchus,

causing obstruction of the bronchus. In these two cases, happily for the patient, he was able to remove the growth bronchoscopically. and those cases from the last reports, and the cases reported by Dr. Miller, too, in his summary, are living today—one 11 years and one 4 years from the time the growth was removed. One or two other cases have been reported also.

In cancer in any part of the body early diagnosis is the most important factor, and in any case of obscure disease of the lung in a person, particularly beyond the age of 35, cancer should be considered. I think the opinion among men in general, is, chest men particularly, if possible all cases of chronic lung supuration, if it is possible, should be bronchoscoped because so often the cases are lung abscess. The beginning of the trouble is due to pulmonary carcinoma and in some of these cases an early diagnosis can be made by means of the bronchoscope.

Dr. Jackson at the same meeting of the American Medical Association in a symposium on carcinoma of the lung, made the statement that a great many cases of carcinoma were discovered by the bronchoscope and by the education of the patients whenever they develop any lung symptoms to go to their physicians for examination not only for early tuberculosis, but the more rare conditions like carcinoma.

As far as treatment of the condition is concerned, I would mention the hope that in the future there will be more of these cases treated successfully. As far as medical treatment is concerned, there is none. The only thing is a palliative. Dr. Miller, and I think most men do, certainly gives a very pessimistic viewpoint as to the efficiency of X-ray. However, he does report that a few cases have been palliated somewhat and life prolonged. He points out one note of warning. In cases in which there is a great deal of lung supuration, abscess, secondary to the blocking of the bronchus the X-ray causes it to be exaggerated and the patient almost takes a septic picture, and some of the cases have died of general sepsis. Those cases should not be X-rayed. (Applause)

Chairman Kinlaw: From now on I am going to have the pleasure of being timekeeper. We are bound to get all the papers in this afternoon.

Chairman Kinlaw: The second paper on the program is "The Importance of an Early Diagnosis in the Treatment of the More Common Chest Conditions," by Dr. D. R. Perry of Durham.

THE IMPORTANCE OF EARLY DIAGNOSIS IN THE TREATMENT OF THE MORE COMMON CHEST CONDITIONS

Dr. D. R. Perry, Durham

The more common chest conditions which I will discuss will be only two: (1) Tuberculosis; and (2) Bronchiectasis. The early diagnosis of pulmonary tuberculosis is very important in the prognosis and also very difficult to obtain but the most important thing to remember in diagnosing the disease is that it is very common, keeping in mind always the possibility of its presence.

There is some confusion between infection and disease; infection is almost universal and in a large proportion both adults and children

react to tuberculin and, besides, some evidence of old invasion can be found on X-ray plates in most adults and in many children but the mere having an infection does not necessarily mean that the person is suffering from the disease at all. This percentage of activity in the patients that react to tuberculin varies from one-half per cent to three per cent by different investigators.

The actual sufferer with pulmonary tuberculosis should be discovered when the condition is in its primary stage. When the patient is only complaining of general malaise, this probably only in the afternoons, with a slight loss of weight (from five to ten pounds), slight elevation of temperature in the afternoons, with normal or subnormal in the mornings, with a pulse rate not more than 90 per minute at any time during the twenty-four hours. In its early stage there is probably no cough or expectoration unless patient has suffered from pleurisy or obscure pains in the chest or hemoptosis as much as a teaspoon full. Making the diagnosis at this early stage is very important and the most important thing is a careful taking of the history regarding exposure, family contacts, about the loss of weight, general malaise, frequent head and chest colds, pneumonia, pleurisies, pains in chest several years previous, hangover of cough following cold he had several months before, prolonged attacks of hoarseness following a cold, nervousness, stomach upsets; in the female patients, concerning their menstrual irregularities; hemorrhoidal conditions and constipation should be investigated. If the physician is on the lookout for the disease the taking of only a short history will often be very enlightening because most people need guidance in unraveling these so-called minor complaints. Often the patient goes to or is brought to, the doctor because relatives or friends have been telling him that he appears to be rundown or pale. He himself, has noticed that he is more tired than usual after a day's work.

I would like to call attention to the examination of all patients suspected; this should not be hurriedly done but should be general and thorough; the ears, larynx, testicles, anus, abdomen and lumph nodes, especially the cervical, should all be investigated. Intestinal tuberculosis may be present when the chest signs are absent. This was too well called to my attention in the past few weeks when a patient with intestinal tuberculosis where his symptoms had been present for about eight months. The diagnosis had been made following laprotomy with removal of appendix and mesenteric glands for diagnosis six months ago. Then, about three months following the first operation a second operation was performed for adhesions and the patient's abdominal symptoms were relieved for about sixty days. The physical examination with X-ray study revealed no involvement of the lungs thirty days prior to second operation and there were no signs of chest involvement until about two weeks before his death.

In so many cases where the lungs are involved with no apparent involvement in any other region the difficulty in making the diagnosis is very great, for there are no glands to remove for laboratory study and the diagnostician must depend on history, physical examination and X-ray study and I would like to say that it is the general opinion that the only method available for detecting early pulmonary tuberculosis is the

careful taking and interpretation of stereoscopic X-ray plates. When rales can be heard in the lungs or as a rule when hemoptosis or pleurisy or cough with expectoration has occurred, lesions of pulmonary tuberculosis are advanced but the early lesions of pulmonary tuberculosis discovered by X-ray examination are not usually accompanied by the above symptoms and I would think that further progress in eradicating tuberculosis depends to a large measure on how successful the general practitioner and the diagnostician are in routinely X-raying all suspected young adults, especially those with a positive family history or who have been exposed to an open case of pulmonary tuberculosis.

Today, no patient can be considered as properly examined unless the lungs have been X-rayed. This means a better understanding among the physicians as a whole, and the public, concerning the importance of this part of the examination. It is being demanded more by the public than ever before but there are many very poor films that are being made and with this condition of poor films means the interpretations are usually misleading. Too many patients with some suspicious elements in their history are not being given the advantage of any X-ray examination by a competent Roentgenologist. More mistakes are made by placing too little reliance on X-ray plates than by requesting them too often.

Why all this talk about early diagnosis? It is known by statistics and follow-up examinations of the early cases that are diagnosed and treated that more than eight out of every ten of these cases are arrested and continue at their usual occupation, preventing the long expensive treatment that is required in moderate and far-advanced cases with the possibility of these cases never becoming arrested. With the statistics showing only four out of the moderate advanced and two out of the far-advanced of every ten being able to return to their usual occupation. This is a very small item compared with the amount of inconvenience, expense for treatment to both the family and to the community at the time of this treatment as so many of these cases never get to a sanatorium. And, too, some of the investigators give out the statement that only 50% of the patients that go to a sanatorium are living at the end of five years and the question in my mind is if we are not sending too many moderate and far-advanced cases to the sanatorium or if it is a reflection on thoroughness of the rest cure. The great tendency to relapse makes it very important that the patient with early pulmonary tuberculosis should be kept under most careful observation for two or three years. This also includes patients who have had pleurisy with effusion and the physician should be resourceful enough to retain the hope and morale of the patient. And also not to be too conservative by waiting too long to institute other means of artificial rest such as artificial pneumothorax, phrenectomy and surgical collapse. Usually these are not matters of early care and are procedures which only the most competent tuberculosis specialist should pass on. By arresting the early cases it would be possible to keep them from ever becoming moderate or far-advanced cases and this in turn will keep these same patients giving their infection to others with whom they come in contact.

Now, bronchiectasis ranks next to tuberculosis as a chronic pulmo-

nary infection and since iodized oil is being used so much more for diagnosis and treatment than formerly this condition is no longer confused with suspected tuberculosis, asthma or chronic bronchitis but is definitely diagnosed and treated in its very early stage.

Bronchiectasis, being anatomic rather than a clinical entity, it is characterized by different forms of dilated bronchi. When infection occurs in these dilated bronchi and the secretions of the lungs it will lead to a chronic productive cough and other symptoms. Years usually lapse between the time of the inception of this condition and the time the symptoms become sufficiently aggravated that the patient will seek medical attention. So, with the chronic productive cough, keeping in mind the possible etiology of bronchiectasis, a painstaking history is very important here. History of respiratory affections in infancy and childhood, especially pneumonia; lung abscess, frequent head colds and chronic infection of the nasal accessory sinuses. There are several theories as to the actual condition that exists and why, but the most plausible are: (1) Injury to the bronchial wall; (2) prolonged obstruction of a bronchus; (3) fibrous contraction. No single theory explains all cases; usually a combination is found and this combination is detected when the oil is injected. One case in particular which I now wish to call to the attention of this section: Patient: Female, white, age 52, gives the following history: In 1920 gives a history of having had influenza; in 1922 a severe attack of pleurisy and as the patient describes, was probably a pneumonitis which kept her in bed for two months. She developed a severe cough with a muco purulent sputum and noticed a great deal of weakness and malaise. Health never so good since. This cough existed until 1926 with much pain in the lower right chest, but at times was able to do some work and she lost weight down to 96 pounds when first seen by me. In 1924 patient was admitted to the State Sanatorium with a diagnosis of pulmonary tuberculosis. After routine examination and observation she was returned home as not having pulmonary tuberculosis but no definite diagnosis was made. At that time on the right side of her chest this report was given to the condition existing: On the level of the 6th and 7th ribs in the mid-clavicular line there is a rather heavy hazy walnut-sized density with fairly well defined margins; the trunks from the lower horn of the hilum are connected with this density, they are very much thickened and their outlines are poorly defined. On the level of the 4th rib and 4th interspace there is a narrow line of increased density probably due to interlobar pleurisy. And on the left side of this condition exists: The vertebral trunk extends to the periphery and terminates in an area of light mottling; the hilum shadow is enlarged and contains numerous nodular densities; there is a slight general thickening of the trunks throughout the side. The picture I now show was made on November 15, 1926, which shows some improvement at the left apex with the condition existing at both bases, somewhat more marked than reported in 1924.

The treatment of this case was begun with artificial pneumothorax on December 11, 1926, when 600 cc. of air were injected; on December 29, 850 cc. were given; January 4, 1927, 1,100 cc. were given and on January 8, 1,100 cc. more were given. You notice this was very fre-

quent and in large amounts but this patient was so emaciated and weak and flabby that the air escaped very readily out under the skin and this necessitated the giving of it more often than is usually done. From January 8th to January 28th there was noticed considerable improvement and each time while this air was being injected the patient would expectorate several mouthfuls of greenish muco purulent sputum while on the table lying on her left side and she would go for several days without cough and expectoration after the air was given. On January 28th there were 1,300 cc. of the air given, which did not escape and lasted her until March 7 when 1,400 cc. were given and this lasted until April 5 when 1,600 cc. were given. Would like to say that on March 7th some over three ounces was expectorated over a period of thirty minutes while the patient was in the operating room.

She continued to improve and gain weight and strength; weight being at that time 104 pounds and then, on May 13, 1,100 cc. were given, and her condition continued to improve so markedly from the collapse it was decided that a permanent collapse was necessary to control her symptoms and to give her the necessary relief as each time before the injection of air her symptoms would return and along toward the last of the artificial pneumothorax treatment she would come in and ask for the treatment on account of the relief she was getting. On June 10, 1927, as picture 277 will show, the 8th, 9th, 10th and 11th ribs were removed and patient continued to show improvement and artificial pneumothorax was discontinued.

Pictures 161 (1-2-27), 202 (3-14-27), 277 (6-30-27), and 560 (6-14-28). Her weight in 1928 was 116 pounds and weight October 7, 1929, 129 pounds and weight to date 132 pounds.

Patient continued to improve under treatment and was given creosote mixtures for about six or eight months following the surgical collapse on June 10th and then her condition early in 1928, when her weight was 114½ pounds, seemed to be at a standstill. With the help of a nose-and-throat consultant on June 14, 1928, we injected one ounce of iodized oil into the lower part of both lungs by injecting a curved needle through the cricothyroid cartilage which plate 560 shows.

After seeing this we decided the collapse was not sufficient and about July 1st a phrenectomy was performed on the right side. This patient, as stated above, complained of considerable pain over the lower right chest but it was decided her pain was not a pleurisy but was an intercostal neuritis so at the time the phrenectomy was done the right fifth intercostal nerve was located and severed in the mid-auxiliary line. This controlled her pain considerably up until now.

This patient then continued to improve symptomatically and physically and she was advised on September 30, about 90 days following the first injection of oil, to repeat the procedure, which was done.
Her condition was markedly improved and she has continued at her work with her chest findings negative. All fluoroscopic examinations of her chest have only shown a thickening of the trunks to the base.

The diagnosis of bronchiectasis in general depends on the following lines of investigation: (1) Symptoms; (2) Physical signs; (3) Bac-

teriological and pathological investigations; (4) Radiological examinations; (5) Injection of lipiodol and radiography.

The one thing I wish to mention now is the X-ray examination; for it is absolutely essential to obtain accurate information relative to the nature, location and extent to bronchiectatic dilatations. The injection of oil is not absolutely necessary in all cases to make a diagnosis. In doubtful cases this method should be used, as in all diseases, the earlier the diagnosis is made the more favorable the prognosis; patient easier to treat and more pleasant for all concerned.

CHAIRMAN KINLAW: Dr. Perry has given us a very good paper. I will call on Dr. P. P. McCain of the Sanatorium to open the discussion.

DISCUSSION

DR. P. P. MCCAIN (Sanatorium): In the case of both these diseases, early diagnosis is most important. In a case diagnosed early you get a disease comparatively easy to treat, that is not contagious, and that almost surely will give a cure. If you let the disease even become moderately advanced, you have a case that is contagious, infects the other members of the family and gives fair prognosis moderately advanced, and almost a hopeless prognosis so far as working efficiency is concerned.

In the first thirteen years at the sanatorium we wrote to each patient to find out the present condition. In the early stage cases we found in thirteen years 93% living and 90% working; in the moderately advanced cases, 60% living and 40% working; and in the far-advanced cases, 27% living and 13% working.

Dr. Perry mentioned the various means of diagnosis. He did not emphasize as much as I would like to have had him do, the importance of the tuberculin test. He stated that the majority of patients and X-ray pictures show evidence of old tuberculosis infection. That is true in a large sense up North. Certainly it is not true of the rural South. It is not true of the average state in the South. North Carolina is largely a rural state and I do not believe more than 27 to 30%, if you tested the entire population of North Carolina, would give a positive tuberculin test.

I would like to emphasize the importance of the general practitioners giving the tuberculin test in any case in which they suspect tuberculosis. I think they will rule out probably 50% or 66 2/3% of the cases of tuberculosis or they can rule out tuberculosis in 50 to 66 2/3% of the cases. The test is a very simple procedure, not quite as accurate as the intracutaneous test. You can almost surely rule out clinical tuberculosis. The Sanatorium furnishes the tuberculin for this test free to any doctor in North Carolina. All he has to do is to write a postal card and say how many tubes he wants. It is put up in a capillary tube with a sterile needle. All you need is a little alcohol to sterilize the site. Any doctor can give the test and rule out tuberculosis in at least 50% of the cases and probably 66 2/3%.

I wish the doctors would use that test more frequently. If it is negative, rule it out. If it is positive, you need to take other steps. I really think it would be wise in every case that shows a positive tuberculosis test to have a thorough check-up. In a good many cases the

fluoroscopic and physical examination and history would be sufficient, but in case there is any suspicion there should be X-ray pictures.

Bronchiectasis is a distressing disease, even worse than tuberculosis in the far-advanced stages, and as Dr. Perry brought out so forcefully if it is diagnosed early it can be helped. In many cases it can be cured; and we especially ought to try to find a causative factor. In quite a number of cases due to sinus infection, by clearing up the sinus infection and other respiratory infection, we can benefit the bronchiectasis very much.

Going back to tuberculosis, I would like to urge on all doctors in the state whenever they find a case of tuberculosis that they urge that every member of the household who has been exposed to the positive case of tuberculosis be studied, at least to have the tuberculin test with practically no cost. All of them can certainly infinitely better afford $1 or $1.50 for a tuberculin test than to allow a definite case of tuberculosis to run along and become hopeless.

Those cases that show a positive test should have a general physical examination. If the family doctor is not satisfied about the case and suspects tuberculosis if he would refer that case to his private tuberculosis specialist or to some of the public clinics, a great many cases of tuberculosis could be found before they become contagious and cured while they can be cured. (Applause)

Dr. J. A. Moore (Asheville): I was very much interested to hear Dr. McCain make a plea for early diagnosis of tuberculosis. For the past three years I have been in a position to see some of the failures of the medical men in diagnosing tuberculosis early, and it is a disgrace to the profession. I think it is safe to say that 30% of all patients with tuberculosis who get their diagnosis when they are far advanced are almost hopeless.

I was particularly interested in hearing Dr. Perry's discussion of bronchiectasis. Bronchiectasis is a dread disease. I would rather have tuberculosis any day. The medical treatment of bronchiectasis is of all avail in the early stages, if it can be diagnosed early. Most cases with a chronic cough which prove non-tuberculous can easily be diagnosed as bronchiectasis with the aid of injection.

In the early stages the medical treatment consists mainly of cleaning of the sinus infection, the use of vaccine, general hygienic treatment and, most of all, postural drainage will greatly relieve patients. Postural drainage, to be effective, should be used every three hours at least in the early stages. Make them stand on their heads and cough it up. Keep the cavities free of pus. A good many will improve. Failing with conservative means, you must consider surgery. Phrenectomy in treatment of bronchiectasis offers the hope of about 35% improved. But our experience has been that always about 35% improve and the great majority, while being improved temporarily, the disease will recur and they are no better.

Bronchiectasis that is well advanced and located in one lobe of the lung is best treated by lobectomy. That may sound radical to you men. If one lobe of the lung can be removed the patient can be cured. I have seen a number of instances where patients were absolutely cured of the

disease by lobectomy. I do not believe thoracectomy is the treatment for bronchiectasis. Hedblom of Chicago, one of the most astute thoracic surgeons of this country probably, advocates removal of ribs from spine to sternum in numerous stages in the treatment of bronchiectasis and reports good results. Lillienthal, Alexander, Graham and Archibald do not get results, but Hedblom does.

Pneumothorax will give you results as long as pneumothorax is kept up, but I think the consensus of opinion of thoracic surgeons of this country is that pneumothorax is especially dangerous because the incidence of empyema is high and when pneumothorax is allowed to be discontinued the disease recurs. You can get a great deal of relief, however, from it temporarily.

CHAIRMAN KINLAW: The third paper is by Dr. William B. Dewar, of Raleigh, on "The Toxic Thyroid." Dr. Dewar:

THE TOXIC THYROID

DR. WILLIAM B. DEWAR

Mr. Chairman and fellow members of the North Carolina Medical Society: There is perhaps no chapter in medicine more interesting to the internist and to the surgeon today than that on *Diseases of the Thyroid Gland.*

When your chairman asked me to present a paper on this subject I was very happy to do so, because more progress has been made in the treatment of the toxic thyroid during the last twenty years than in the preceding nineteen hundred years. This progress has been due to developments in operative skill, local anesthesia, a more accurate knowledge of the pathological processes, keener diagnostic ability, basal metabolic determinations, and by far the most important development, a closer relation between surgeon and internist with the full understanding that goiter is both a medical and a surgical disease, to be studied and treated by both.

My subject includes only *Graves Disease* and *Toxic Adenomatous Goiter.* I have nothing new to present, but I hope that this paper may stimulate such discussion and thought among us that we may be benefited by each other's experiences.

Adenomatous Goiter with hyperthyroidism, and Graves Disease are considered by some authorities in America, and particularly those in Europe, as being different stages of the same disease. However, with the information at hand, there does not seem to be any doubt that these two diseases are distinct and separate and should be considered so. Later in my paper, certain facts will be stated to justify this conclusion. As for Toxic Adenomatous Goiter, we know that a large percentage of Colloid Goiter which occurs at puberty remains and at about twenty years of age makes its appearance as simple non-toxic adenoma, *as a general rule.* It is believed by many that these adenoma develop from fetal rests and are present, *without recognition,* in the so-called Colloid Goiter. Usually, about fifteen years after the appearance of these assymetrical, nodular enlargements in thyroid, symptoms of hyperthyroidism may appear. The average age of appearance of toxic symptoms in this type of case is thirty-five years. For some unknown rea-

son, or possibly some known reason, such as increased iodine taken in food, or given by mouth as medication, this non-toxic adenoma has now become overactive. The gland at times may not be perceptibly enlarged or abnormal to palpitation, yet as a rule, it is asymetrically enlarged and nodular to touch. In addition to these signs, it has toxic symptoms such as nervousness, tremors, palpitation, tachycardia, loss of weight and strength, with a tendency towards hypertension, often myocardial degeneration, increased metabolic rate and occasional symptoms of pressure. These symptoms are gradual in their onset.

To every practitioner of medicine, Graves Disease is well known. Its etiology is questionable. To quote Boothby, "Graves Disease is a constitutional disease, apparently due to an excessive and probably abnormal secretion of the enlarged thyroid, showing pathologically a diffuse parenchymatous hypertrophy and hyperplasia." This disease usually asserts itself within a few weeks to six months. It is usually characterized by fine tremors, palpitation, extreme nervousness, tachycardia, fatigibility, loss of weight, increased metabolic rate, gastro-intestinal crises of vomiting and diarrhea, and exophthalmos. The gland may, or may not be enlarged. A sufferer from Graves Disease does not depend on any preëxisting goiter, for often goiter is absent early and develops later when constitutional symptoms show up. A clinical diagnosis of these two conditions is sometimes quite difficult, especially in the early stages of Graves Disease and particularly when the thyroid of toxic adenoma is not specifically palpable. Sometimes the diagnosis is difficult to the naked eye even after the gland has been removed, and then again the two diseases are found in the same gland. The absence of adenoma in a hyperfunctioning gland is presumptive evidence of Graves Disease but in about 18% adenomata are present in the typical gland of Graves Disease. Its presence here is believed to be coincident and in no way associated with the disease. There are some reasons to believe that Graves Disease and Toxic Adenoma may be present and active in the same gland, at the same time.

That there are many points of similarity between these two diseases is true, but if we take into account the following facts, it is insufficient ground to believe that the two conditions are manifestations of the same disease. The reasons for his differentiation may be based on the following points:

FAMILY HISTORY

Toxic Adenoma often occurs in the same family, whereas in Graves Disease there is often a family history of nervous unbalance or glandular abnormality.

AGE OF ONSET

The Toxic Adenoma usually develops at about the 36th year, whereas Graves Disease usually occurs at about the 25th year of age.

HISTORY OF GOITER

There is often an old, non-toxic adenoma present before hyperthyroidism develops, whereas in Graves Disease there is usually no history of previous goiter.

MODE OF ONSET

Toxic Adenoma usually develops insidiously while Graves Disease develops quickly . . . usually within six months.

PHYSICAL SIGNS OVER THYROID

Toxic Adenoma has no abnormal thrill, bruit, or throbbing over it, whereas these signs are pronounced in Graves Disease.

EYE SIGNS

There are no pathognomonic eye signs in Toxic Adenoma . . . in Graves Disease the eyes give the expression of chronic fright and there is almost always a Von Grafe with slight or marked exophthalmos.

THE HEART RATE

In Toxic Adenoma the heart rate usually runs from 100 to 120 . . . in Graves Disease it varies from 140 to 200 a minute.

BLOOD PRESSURE FINDINGS

The cases of Toxic Adenoma show *hyper*tension usually, whereas the cases of Graves Disease show *hypo*tension commonly.

TYPE OF TREMOR

In Toxic Adenoma the tremor is coarse, whereas in Graves Disease it is of a fine intention type with occasionally choreiform movements.

LOSS OF WEIGHT

In Toxic Adenoma the loss of weight is slow and not a pronounced symptom . . . in Graves Disease the loss is very rapid.

FATIGUE

In Toxic Adenoma weakness is not a marked symptom, where in Graves Disease it is an early and major complaint.

THE SKIN

There are no skin abnormalities in Toxic Adenoma while in Graves Disease the skin is moist with a clamminess present. Vasomotor unbalance and dermographia are often noted.

THE INFLUENCE OF IODINE

Toxic Adenoma is not helped by iodine . . . on the other hand it is made worse by its long continued use, increasing the hyperthyroidism. In Graves Disease, iodine is temporarily capable of producing marked benefit.

SURGICAL RESULTS

Thyroidectomy in Toxic Adenoma results in recovery because it removes the offending tissue . . . in Graves Disease, thyroidectomy is usually followed by improvement, but this is not synonymous with cure and often doesn't stand the test of time.

CRISES AND REMISSIONS

There are no crises or remissions in Toxic Adenoma . . . hyperthyroidism is progressive. In Graves Disease the course is characterized by crises and remissions.

RELAPSES

There are no relapses in Toxic Adenoma after surgery *if sufficient* gland has been removed. Operative procedure in Graves Disease is no assurance against relapse.

SPONTANEOUS RECOVERY

Spontaneous recovery to normal never occurs in Toxic Adenoma while there may be an occasional spontaneous recovery to normal in Graves Disease.

REPRODUCTION OF SYMPTOMS

It is possible to produce all of the symptoms of Toxic Adenoma by simply feeding sufficient thyroid extract . . . it is impossible to produce the symptoms of Graves Disease by any method.

If all of these factors are carefully considered and weighed, the differential diagnosis between these two diseases will not be difficult, as a general rule. Furthermore, considering these points, there seems to be little doubt that these are distinct and separate diseases.

No paper on the thyroid gland would be complete today, without some mention of the use of iodine. I shall not bore you by going into detail on this subject, as its uses are well known to every physician.

In Graves Disease, Lugol's Solution before and after operation is a most rational therapy and should be used in doses of 7 to 10 minims for 1 to 2 weeks before operation, with the patient at absolute rest in bed. If gastro-intestinal crises are present, larger doses are indicated and should be used. Lugol's Solution should be used post-operatively for 2 to 5 weeks, in a dosage of about 10 minims per day. Its use, in this manner, has reduced surgical mortality, in competent hands, to practically nil.

In Toxic Adenomatous Goiter, iodine is of no value and will increase hyperthyroidism if employed over long periods.

SURGICAL AND X-RAY TREATMENT

Surgical and X-ray treatment may be considered together inasmuch as there seems to be two great schools of thought on the subject. The *surgeons say* that X-ray is contra-indicated in Toxic Goiter and simply delays operative procedure, allowing the patient to become worse, and making the operation more dangerous to the patient and more difficult to the surgeon. The *X-ray man* says "Why be operated on, with great danger, when X-ray treatment will cure with no risk or bad results? So here we are . . . to determine the real value of X-ray treatment as compared with surgery. I have written to a few prominent internists and Roentgenologists known to most of us, and have personal communications from them. I think that it might be interesting to quote their opinions.

McRae (Professor of Medicine at Jefferson) says: "There seems to be no question that in some cases X-ray treatments acts very well . . . my general feeling is to prefer surgery to X-ray, if other things are equal."

Myers (New York Post-Graduate Hospital) reports 1,000 cases treated by X-ray with excellent results.

Pancoast (Professor of X-ray at University of Pennsylvania): "As

a rule, in our opinion surgery is preferable to X-ray treatment. . . . X-ray treatment will often make poor operative risks, by improving them, safe for surgery. Mild cases are treated most effectively. The skin is likely to be disfigured if excessive treatment is indicated."

Stengel (Professor of Medicine at U. of P.): "I have seen some of the most brilliant results in cases of Toxic Adenoma. In some of the milder Exophthalmic Goiter cases, I have seen sufficiently good results to justify X-ray treatment."

Manges (Professor of X-ray at Jefferson): "I think the results in both diseases are almost uniformly satisfactory. Some of my most brilliant results have been in recurrence after surgical operations."

Hamman (Johns Hopkins Univ.): "Surgery offers a simpler, speedier, more satisfactory method of treating these conditions than radiation."

Milton Bridgers of New York City, reports most satisfactory results in both types of the disease, following X-ray treatment.

Lewellys F. Barker (Johns Hopkins): "Surgical treatment is preferable to that of X-ray. We have seen favorable results in Toxic Adenoma and in Exophthalmic Goiter."

There are certain types of cases in which X-ray treatment is contraindicated, namely, the cases with marked glandular enlargement or the cases with pressure symptoms. I have had some very satisfactory results with X-ray treatment in the mild cases of Toxic Adenoma and am confident that X-ray has a definite place in the treatment of the toxic thyroid. With my limited experience in the treatment of thyroid diseases, I prefer surgery to X-ray because the results are uniformly more satisfactory, the relief of symptoms is more rapid, and the cure more certain. I thank you!

Chairman Kinlaw: The thyroid proposition seems to be a surgical and X-ray one as well as a medical one. If there are any surgeons or X-ray men who would like to talk about it for about two minutes along with the rest, we would be glad to hear from them, too. Please feel perfectly at liberty to do so. Who will open the discussion?

DISCUSSION

Dr. W. H. Sprunt, Jr. (Winston-Salem): I was struck with what Dr. Dewar had to say about the fact that Toxic Adenoma practically never is cured spontaneously and with that in mind we see adenomas sometimes before they become toxic. There has been recommendation of the removal of the adenoma before it becomes toxic with the idea of preventing trouble later.

In the two conditions of Graves Disease and Toxic Adenoma, our experience with adenoma is that by working so assiduously it does a great deal of damage to the heart. When they come to operate they can stop it, but they cannot repair it.

Exophthalmic or Graves Disease, of course, is very rapid. The heart is usually not damaged if you get them fairly early. One thing that I wanted to mention was the relation of infected tonsils as a possible causative factor in both Toxic Adenoma and exophthalmic goiter.

A few years ago we went to most of the county schools around, mak-

ing a survey of the children and almost invariably we found that a girl with an enlarged thyroid also had bad tonsils. There was a marked improvement in a great many by simply removing the tonsils. (Applause)

CHAIRMAN KINLAW: Is there any other discussion?

DR. (Washington): Following what Dr. Sprunt says on the relation of the tonsils to the thyroid, I think most or a good part of the results that are obtained by X-ray treatment of the thyroid are due to the stopping of infection in the tonsils from the X-ray more than actually to the X-ray effect on the thyroid. In my experience X-ray treatment has not been very striking.

DR. F. R. TAYLOR (High Point): Sometimes we miss important things by forgetting to look for them. I once saw a group of medical officers in the Army going over the heart, making all kinds of diagnoses, all kinds of heart disease. The diagnosis was made from some distance by looking at the eyes and neck. He had an exophthalmic goiter. The thing impressed me as a gastro-intestinal crisis of a true exophthalmic goiter. They certainly can look like a cut surgical abdomen. Even if that is ungrammatical, it is useful. We don't want to get these people subjected to laparotomy. We need thyroidectomy.

On the other hand, we don't want to go to the other extreme. We simply have to work out each individual case as it comes along.

There is one other point, I think, that is of a good deal of importance. That is the question of increasing appetite with decreasing weight which is oftentimes encountered in the thyroid conditions and comparatively few others, perhaps in certain intestinal worms. I don't know very much about it. I hope to learn something about it pretty soon.

CHAIRMAN KINLAW: The next paper is "A Clinical Consideration of Intestinal Worms," by Dr. Paul F. Whitaker of Kinston.

A CLINICAL CONSIDERATION OF INTESTINAL WORMS

DR. PAUL F. WHITAKER

In a former article the writer reported a series of five hundred stool examinations on consecutive patients presenting themselves for study. Since that time a routine stool examination has been continued, and the present paper embraces a series of 1,650 cases. This work has been done to determine in a measure the frequency of intestinal parasitic infection in Eastern North Carolina. Some years back the subject was much before the profession, due to the work of the Rockefeller Foundation and enormous good was accomplished through this splendid work, particularly in discovering and treating hookworm infection. At that time one could stand on the street corner on Saturday afternoons in any North Carolina town and diagnose by inspection hookworm infection in the weazened, pasty, listless, and anhydremic faces of people from the rural districts. Now, however, this type of case is seldom seen, and unless the examiner is cognizant of the frequency of intestinal worms many cases are overlooked. It is apparently now a somewhat neglected subject.

The 1,650 cases upon which this report is based were private white patients coming through the office or service of the writer at Memorial Hospital, Kinston, N. C. No Negro or child under twelve years of

age is included in this series. These cases represent a fairly good cross section of the adult population, many infections being found in the homes of the well-to-do, as well as those in more moderate circumstances, and those from the rural districts. Out of the 1,650 stool examinations made, 374 were positive, giving a percentage of 23% infection with some form of intestinal worm. Of this number there were 347 cases of hookworm, 18 cases of round worm, three cases of dwarf tapeworm, one case of pinworm, and three cases of beef tapeworm. In the cases of beef tapeworm the segments and not the ova were found in the stools. Of the total number it can be readily seen, that hookworm is by far the most prevalent parasite, with round worm next in order of frequency. Of the 18 cases of round worm, 8 of these were also infected with hookworm, and two of the three cases of dwarf tapeworm also showed hookworm infection. Of the 374 positive cases 204 were males and 170 were females. The oldest positive case was that of a person 67 years of age, the youngest 12. While it is not thought that age is such a significant factor, this point is mentioned for the fact that we believe that the percentage of positive cases would be even greater in children than in our series of adult cases.

HISTORY AND SYMPTOMATOLOGY

A careful history will often lead one to suspect parasites. If asked directly the patient can often be made to recall having had dew poisoning, ground itch or foot itch in childhood or adolescence. Infection with hookworm is usually due to penetration of the unbroken skin by the larvae of the parasite. Sixty-two per cent of the positive hookworm cases gave a history of an eruption on the feet. This percentage would probably be higher if the patient's memory could go back far enough. Some patients can be made to recall having passed by bowel or even vomited so-called stomach worms. All three of the cases of beef tapeworm noticed the segments of the parasite in their stools. A voracious appetite is supposed to be a prominent symptom of tapeworm, but none of these patients had this symptom. Sufferers with pinworm infection frequently complain of intense itching around the anus and vagina.

Weakness, dyspnea, and chronic and early fatigue were complained of by seventy-five per cent of the positive cases. The greater the degree of associated anemia, the more marked were these symptoms. Nervousness, vertigo, anorexia irritability, listlessness and headache are prominent symptoms. Vague digestive disturbances are quite common. We were greatly impressed with the frequency of intestinal worms in the so-called neurotic or neuresthenic individual and we believe that this diagnosis will be made less often and with more caution if one will take the time and trouble to examine the stools. It is gratifying to see the results of treatment in this type of case.

PHYSICAL EXAMINATION

The appearance of the patient is often suggestive. The skin and visible mucous membranes are usually pale and suggest anemia. The patient is often but not always underweight. The muscles are usually flabby. In cases of pinworm infection the muco-cutaneous junction around the anus and vagina is often reddened and hypertrophied from

constant scratching. Slight oedema of the ankles with bloating and purplish discoloration under the eyes, without cardiac or renal pathology is a fairly common finding. A mild icterus of the haemolytic type is sometimes present. Hemic murmurs were often found on cardiac auscultation in the more anemic cases. A palpable spleen is no uncommon finding. Forty-eight per cent of the positive cases had a definitely palpable spleen. There were other patients in the positive series with palpable spleens, but they either had or gave a history of having had malaria, or some other condition that resulted in splenomegaly. These cases are not included in the thirty-eight per cent reported. All cases with splenic enlargement had at least a moderate secondary anemia. Why almost forty per cent of patients with intestinal worms should have an enlarged spleen is an interesting question. It might be explained as follows: One of the functions of the spleen is to remove crippled or worn-out erythrocytes from the circulation. The parasites certainly produce an anemia probably by elaboration a haemolytic substance, which acts on the red blood cells. Granting this theory is correct the cells rendered useless by the action of the elaborated toxin are removed from the circulation by the spleen in such numbers as to cause spleenic enlargement.

LABORATORY EXAMINATION

In no condition is accurate and properly interpreted blood and stool examination of more value than in the diagnosis of intestinal worms. The differential blood count revealing an increase in eosinophiles is of inestimable value in leading one to suspect intestinal parasites. Eosinophilia of from 3 to 15% is practically a constant finding in hookworm and tapeworm infection. Contrary to some observers we believe it to be present in ascaris infection as well. The highest eosinophile count in any case was 15%, the lowest 3%. The average eosinophile count for the whole series was 5.75%.

Every patient with intestinal worms in our series save two had a secondary anemia, characterized by a diminution of red blood cells and hemoglobin. The highest red cell count in any male was 5,020,000, the lowest was 1,340,000; the average was 4,531,000. The highest hemoglobin percentage was 90, the lowest 35; giving an average of 72.6%. The highest red cell count in any female patient was 4,360,000, the lowest was 1,000,000, giving an average of 4,140,000. The highest hemoglobin percentage in any female case was 80; the lowest 18; giving an average of 66.3%. Accepting 5,000,000 red blood cells per cubic millimeter of blood as normal in the male, and 4,500,000 as normal in the female with normal hemoglobin percentage as 90 and 80, respectively, it can readily be seen the degree of anemia produced. The presence of eosinophilia in intestinal parasitic disease is interesting. According to Neal and Robnett, eosinophiles are not only present in the blood of patients with intestinal parasitic disease, but are present also in the wall of the intestine. Their presence, like the presence of polymorphonuclear leukocytes in inflammatory disease and lymphocytes in tuberculosis and syphilis, is intimately bound up in chemotaxis, specific and selective action of the cells for particular irritant micro-organism

and their toxin, and as a response to the need to build up protective antibodies, local enzymes and ferments.

The recognition of the ova of the parasite in question in the stools is of course the final procedure upon which a diagnosis is made. The technique of the stool examination of these cases is as follows: A small particle of the stool is mixed with tap water and shaken vigorously. It in then centrifuged for one minute and the supernatant fluid poured off. Tap water is again added and the mixture centrifuged for one minute. The ova are concentrated in the bottom of the tube, and this material is examined under the microscope. It requires training, skill and patience to recognize and differentiate the various ova, and this work should be done by one meeting the requirements. Examination of the fecal mass with the naked eye will suffice for the pinworm. Each parasite is about a quarter of an inch in length, colorless, and projects its extremity above the fecal mass where it moves about slowly like threads waving in the air. A negative stool examination, however, should not deter one from making the diagnosis of hookworm infection where eosinophilia is present, and the symptoms warrant the diagnosis. We have repeatedly demonstrated the presence of ova in the stools after treatment of such cases.

TREATMENT

For hookworm and round worm infections a combination of oil of chenopodium and carbon tetrachloride is used in average doses of 30 minims each put up fresh in capsules. This dose is varied in some cases, depending upon the condition of the patient.

For tapeworm infections we have found nothing better than the oleoresin of aspidium in 40-grain doses combined with two drams of spirits of chloroform. Proper purgation of the patient with abstinence from food is essential.

For pinworm infections quassia enemas are used. It takes prolonged and persistent treatment to rid the patient of this troublesome parasite. We treat the patient until a negative stool is obtained, and have found that it takes an average of two treatments to effect a cure.

The treatment of deRivas of Philadelphia is mentioned. He treats a patient by the instillation of physiologic saline solution into the duodenum and rectum, basing his treatment on the assumption that a solution at a temperature of from 45 to 47 degrees centigrade is lethal to the parasite, and at the same time has no ill effect on the intestinal mucosa. Experimental work on animals tends to bear out his assumption. The author has had no experience with this method, but it is quite a common clinical observation that round worms are often vomited by children with hyperpyrexia, the high temperature probably playing a part in causing the parasite to leave its host.

SUMMARY AND CONCLUSIONS

1. Intestinal parasitic disease, particularly hookworm infection, is much more prevalent than is generally recognized and by no means so easily eradicated as is commonly supposed.

2. We believe that careful histories, thorough physical examina-

tions, carefully made stool and blood examinations, with their proper interpretations, offer the best means of detecting these infections.

3. Quite a number of so-called functional nervous patients suffer from unrecognized intestinal parasitic infections, and respond promptly to treatment.

4. A palpable spleen is recorded as a common physical finding in intestinal parasitic disease and the explanation of this finding is attempted. So far as we know, this finding has not before been reported as associated with intestinal parasites.

5. Secondary anemia is practically a constant finding in intestinal parasitic diseases. Attention is again called to increase of eosinophiles.

6. Treatment of the various parasites is discussed. Treatment is persisted in until a negative stool is obtained, and it has been our experience that it takes an average of two treatments to effect a cure.

7. In conclusion I wish to thank Miss Mildred Ringle, R.N., technician at Memorial General Hospital, Kinston, N. C., for her assistance in studying these cases from the laboratory standpoint. Her enthusiastic and accurate work has illuminated the study of these cases.

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DISCUSSION

Chairman Kinlaw: Dr. Colby of Asheville is to open the discussion on this paper.

Dr. C. DeW. Colby (Asheville) The human body is some hotel. Dr. Whitaker has said about all there is to say about existing parasites except that the use of the microscope in the office of every physician is absolutely necessary to diagnose medical conditions, especially these parasites. In our work we have found that in many instances a patient has been sent to us for tuberculosis, and the lung condition due to irritation of lymphatics has been mistaken for tuberculosis.

The doctor has mentioned the blood count as being a very strong indication, but we have found those worms in a one per cent case and also a forty-four per cent case and everything in between. So you cannot be assured by your count. You must see the egg or larvae in the stool.

We have recently found it in a woman who had been eating uncooked fish, 350 miles from the coast and she was in perfect health otherwise.

I am grateful to Dr. Whitaker for bringing up the importance of the use of the microscope in every complete examination. Examine the stool as well as the sputum and blood.

Dr. Ingersoll (Asheville): I was interested in hearing Dr. Whitaker say the negative stool examination does not always rule out parasites. I remember a case I had. There were symptoms of parasite infection but none found in the stool. However, I gave her a dose of medicine. She passed one male worm and it relieved her symptoms.

Dr. William B. Dewar (Raleigh): I think Dr. Whitaker is to be congratulated on bringing us the subject in such complete form. Certainly most of us are not thinking about worms in this day and time and we often overlook it for that reason. He certainly has given us a clear paper.

There is one thing we possibly should not forget at the present time, particularly in the feeding of large doses of liver and so-called liver extract by mouth in the cases of anemia. This condition will almost always produce eosinophilia and if we are feeding our patient liver or extract, we must bear this in mind if we find eosinophilia.

The other thing that is called to my attention is the fact that often pain in the abdomen from these intestinal parasites is confused with appendicitis. I don't think there are many surgeons in North Carolina who haven't opened abdomens for acute appendicitis and found a condition of parasites. I remember distinctly a case which came in with acute pain in the belly. It was diagnosed in Philadelphia as acute appendicitis. It was due to round worm. I think probably most of us can remember such cases and I wish to thank Dr. Whitaker.

Dr. Chas. F. Strosnider (Goldsboro): This is a subject which concerns every physician practicing medicine. These parasites have been found from the coast to Tennessee. I have been fighting intestinal parasites for the past twenty years, having been one of the three men who began the finding of this parasite throughout North Carolina when it was not at all popular to find them in a physician's practice because they informed us quite frequently they had no patients suffering from intestinal parasites.

I don't believe the duration of it is known. I believe once hookworm, always hookworm until treated for it. I have had patients where I could get no history with less than a twenty-year infection.

Several other points are important. That is, you have a patient with frequent nose bleeds, patients who are not natural bleeders, but who bleed very freely and whose hemorrhage is difficult to stop due to the toxin of the hookworm parasite. You will often have patients whom you deliver who will have quite marked hemorrhage and you will find those individuals are heavily infested hookworm patients. You can prove this to your own satisfaction by taking the heads of six hookworms, putting them in a small glass and putting in a drop of blood. That drop of blood will not coagulate.

There is another symptom and sign if you happen not to have a microscope, and it will prove 98 per cent perfect if you can eliminate acute conditions of the duodeum and liver or gastric ulcer. There is pressure in the direction of the duodeum. It is present in 98 out of 100. I checked up in hundreds of cases in diagnosis of this condition.

Another thing about determining when your patients are well. We found in treating thousands of patients that medicine which we were

using at that time made the parasite very sick and it did not deposit eggs over two weeks after the patient had received treatment. Therefore, if you examine the patient after you have given treatment in less time than two weeks you should ask the patient to bring a second specimen for examination two weeks later.

Furthermore, a negative specimen should not discourage you because these parasites living in the duodeum cause inflammation and that causes throwing out of a thick tenacious mucous which protects the parasite and likewise protects the egg from escape. You will find that you may give as many as four or five treatments, before you get the parasite, but if you use a teaspoonful of soda three times a day for three or four days and give treatments, you will get parasites which are protected from this thick, tenacious mucous. (Applause)

Dr. Heath Nisbet (Charlotte): In the last four or five years I have seen five cases of strong infection of bothriocephalus latus. I have not been able to cure these cases. I should like for Dr. Whitaker or anybody to tell me if they know of anything that will kill these worms.

Dr. J. M. Templeton (Cary): I never hear hookworm discussed but that I recall something personal. In the summer of 1863 I was sick all summer. I had had the itch in the early summer. Nobody knew what was the matter with me in those days, and the next spring I was still sick. I know now from the symptoms what was the matter with me, but I just want to tell you what cured me because it was purely empirical, but very successful.

My grandmother came over to visit and saw that I and another colored boy (laughter) had something wrong with us. She decided we had worms and stewed up a big pot of Jerusalem oak seed and sulphur and molasses and made us take it. I got well of the hookworm disease.

Chairman Kinlaw: The next paper, I can assure you, is a very good one, and I hope none of you will leave until you have heard it. It is by Dr. J. A. Elliott of Charlotte. His title has been changed to "The Modern Conception of Eczema." Dr. Elliott!

THE MODERN CONCEPTION OF ECZEMA

Joseph A. Elliott, M.D., Charlotte, N. C.

There are two schools of thought regarding the causes of eczema. A modern group believes that eczema is a form of dermatitis and is produced by extrinsic or exciting causes. According to this group there is no difference between eczema and dermatitis etiologically or pathologically. The second group insists that eczema is fundamentally a constitutional disease, and the exciting cause reacts on a susceptible background. They point out further that an eczema persists and may even extend after the exciting cause has been removed. This may be illustrated by the fact that two persons under the same conditions may come in contact with poison ivy; one person develops a typical dermatitis venenata which subsides under soothing applications in a week or ten days; the second person not only does not respond to the usual treatment but the eruption spreads to parts of the body which have had no contact with the irritant. The patient may present the typical picture of

eczema even months after the exciting cause has been removed. In the former patient the condition subsided within a short time after the exciting cause was removed. In the latter case the removal of the exciting cause had no effect on the eruption. It is therefore contended that the latter type of patient had a predisposing background which is constitutional.

Both schools have many advocates in this country and abroad. Stokes takes a compromise position and describes eczema as "a dermatitis in which the constitutional background has come to outweigh the exciting cause, though both are present at the outset and may continue present throughout the picture."

This conception of eczema, in my opinion, is a practicable one and one which takes into consideration both theories. If we accept this viewpoint we must then have a thorough understanding of both the predisposing and exciting causes of dermatitis. This is particularly true if we are to obtain results in our treatment of such cases. A careful and detailed history will often throw light on an obscure case. In the taking of such a history it is well to keep in mind a general outline covering the predisposing and exciting causes of dermatitis. Under predisposing causes, Stokes includes:

1. Race.
2. Age.
3. Infection (a) focal, (b) systemic.
4. Parasites.
5. Neoplasms.
6. Abnormalities in blood chemistry.
7. Disturbances of diet.
8. Disturbances of intake and output ratio.
9. Gastro-intestinal disturbances as such.
10. General sensitivety.
11. Nervous overload and disturbance.
12. Endocrin abnormality as such.
13. Cutaneous dystrophies and functional abnormalities.

EXCITING CAUSES

1. External irritants.
    - (a) Occupational contacts.
    - (b) Drugs and medicaments.
    - (c) Chemicals.
    - (d) Cosmetics.
    - (e) Vegetable poisons.
    - (f) Light, heat and cold.
2. Allergy producing or exciting agents.
    - (a) Specific—food and other proteins, pollens, plants, animal products, etc.
    - (b) General—serums, bacterial toxins, vaccines.
3. Infections.
    - (a) Ringworm.
    - (b) Streptococcus and staphylococcus infections, local and general.

4. Parasites.
5. Trauma.
6. Nervous shock.

There are three groups of diseases that may closely resemble each other clinically and often present difficulties in properly classifying them. These are (a) chronic dermatitis venenata, (b) eczematoid dermatitis, (c) eczema.

In the first group we have a dermatitis which is produced by an external irritant and which subsides on the withdrawal of the irritant; examples are primrose dermatitis, novocain dermatitis, etc. This group is a large one and often includes many of the so called occupational dermatoses. On the other hand, Jackquet, in an etiological study of occupational diseases, concluded that there was a close relationship between gastro-intestinal disturbances and occupational dermatoses. He believes that the internal irritant is the predisposing factor and the external irritant the exciting factor in these cases. If this be true then our definition of eczema would include this group. The grouping in such cases, however, would depend on whether or not the condition cleared upon removal of the exciting cause.

Eczematoid dermatitis includes a group of dermatoses which are mycotic or infectious (pyogenic) in origin. Many of the former "chronic eczemas" of the hands and feet are now known to be due to a fungus infection or as a secondary sensitization phenomena known as dermophytids. Ormsby and Mitchell were the first in this country to demonstrate by microscopic and cultural methods the presence of pathogenic fungi in scrapings from lesions on the hands and feet. Numerous workers have confirmed their findings. We now recognize eczematoid ringworm of the hands and feet as one of the most prevalent of all skin diseases and incidentally a difficult one to permanently cure. Many of the eczemas of the groins, axillae and submammary region are of mycotic origin. The moist surfaces offer an excellent culture media for the growth of fungi.

Engman first called attention to a group of cases which had been hitherto considered eczema and described them under the title of infectious eczematoid dermatitis. The staphylococci are chiefly responsible for the disorder. However, C. J. White has shown that streptococci may be the offending organisms. The eruption is induced in most instances by an antecedent pus infection, such as discharge from ulcers, abscessed sinuses or even from a simple pustule.

White has demonstrated that the so called seborrhoeic eczemas are produced by yeast infections. He was able to reproduce the lesions by inoculating the yeasts on uninvolved parts of the patient's body. Stokes points out that in the background of this group there is a disordered carbohydrate metabolism, often a hypochlohydria, elements of nervous stress and strain, focal infections and occasionally allergic elements.

It is thus seen that many of the cases formerly classified as eczema are now placed in our first two groups.

Infantile eczema includes several types. The allergic eczemas are those which are produced by sensitization to food proteins, notably eggs, milk and wheat. Cutaneous sensitization tests are of value in determin-

ing the offending protein. On withdrawal of this protein recovery takes place. The carbohydrate metabolism factor is responsible for another group. This group responds to a reduction in the carbohydrate intake. A third group includes the infectious eczematoid dermatitis cases. Here definite infection with abscess formation and a general adenitis is encountered.

Many of the acute cases of dermatitis in adults which we see today are produced by too much soap and water and too little oil in the skin. The shower bath has been to a great degree responsible for this condition. A few cases are seen where specific protein sensitization can be demonstrated. Metabolic disturbances are sometimes encountered and endocrin disturbances are occasionally encountered. It is not infrequent to find women with a dermatitis of the neck closely allied to neurological disturbances. This condition, in my experience, is seen only in women and in many cases there is a nervous factor that is evident. It is necessary to clear the patient's mental picture before a cure is obtainable.

The senile eczema occurs late in life, when the sebaceous glands are losing their activity, thus leaving the skin dry and irritable. The general functions of all organs of the body are on the decline thus presenting a picture of constitutional overload. These cases present a real problem and often obtain little or no relief from the correction of many possible causes.

The most difficult of all eczemas to treat is the diathetic eczema. These patients fall well below the average in their capacity for resisting disease. They are often the victims of asthma, unusually nervous, and are hypersensitive to local irritants. Pusey believes that such diathesis or predisposition is often the result of poor ancestry, as shown by too intimate marriage among ancestors or by a neuropathic family history. Whatever may be found as an exciting cause, its removal brings only temporary relief if any at all. Fundamentally the disease is incurable.

Treatment—The treatment of a case of eczema calls for a thorough history and examination of the patient. Exciting causes should be sought for and removed. The patient's diet should be regulated. Especial attention should be given to the carbohydrate intake. Protein sensitization test should be made in resistant types of the disease. Digestive disturbances should be corrected and bowel movements regulated. A search for focal infections should be a part of the routine examination of the eczematic. Local infections, either bacterial or mycelial, may be the cause of the disease. In patients with a dry skin oils and greases are of great help. In the acute stage when there is considerable exudation moist dressing of diluted Burow's solution are of value. In the dry stage ichthyol and crude coal tar ointments are used to advantage. Small doses of carefully administered X-rays are frequently beneficial. Quartz therapy can be used with greater safety and often with equally good results.

Chairman Kinlaw: Who will open the discussion of Dr. Elliott's paper? I am sure all of you have certainly diagnosed and treated a lot of them that probably did not get well, and some of them did. We would be glad to have some discussion of Dr. Elliott's paper.

Dr. J. M. Templeton (Cary): We are beginning to find out, gentle-

men, that it takes more than one man to make a diagnosis and treat cases. For instance, I did not know until recently that I had to have the eye, ear, nose and throat man to help me when I had a case of asthma on my hands, but in recent times I have found out that focal infection is frequently the cause of the asthma.

There is something of that same kind involved here. A skin specialist, in order to handle eczema, should be something of an internist. I caught the idea from somebody or from observation and experience (I got it anyhow) a long time ago that if you would clean out the digestive tract and the intestinal tract you could cure a great many cases of eczema that you are not otherwise able to handle. If you get the intestinal tract as near sterile as it ought to be, the local applications are very much more effective.

Chairman Kinlaw: The next paper is "The Etiology and Treatment of Pellagra," by Dr. F. R. Taylor. As you know, he has just revised the work in the Oxford Loose-Leaf Medicine on this subject. I know he is competent to take care of it for you. Dr. Taylor!

THE ETIOLOGY AND TREATMENT OF PELLAGRA

Frederick R. Taylor, B.S., M.D., High Point, N. C.

Dogmatism is not limited to the field of theology. It is a tendency existing in all fields of human thought, including science. We are still in process of freeing ourselves from its baleful influence. The closed mind and undue submission to authority check progress. Independent thought that dares to break with authority when authority cannot be harmonized with fact, makes for progress. On the other hand, there is a type of mind that rebels against truth, only, of course, to meet disaster. However, most of the greatest names in both theology and science have been those of enlightened conscientious heretics, using the term "heretic" in its widest sense of one who takes a stand in opposition to accepted authority in his field. Were not Vesalius, Harvey, Pasteur, Lister, and others, medical arch-heretics? Yet where would we be today without them?

It has recently fallen to my lot to make a fairly intensive study of pellagra, and I have emerged from that study a sadder, and, I hope, a wiser man. I have been forced to the conclusion that the etiology of pellagra, despite the classic work of Goldberger and his associates, is probably still unknown, and that the best methods of treatment available today may have to be supplanted, or at least supplemented, by the discoveries of tomorrow. Therefore, I have taken this topic for discussion in order that we may try to see a little more clearly just what we do know on this subject and just what we do not know.

The present orthodox position on the etiology of pellagra is of course that developed by Goldberger and his associates, viz., that pellagra is due *solely* to a lack in the diet of a certain substance known variously as vitamin P-P, B2, F, or G. I shall call it vitamin G.

Goldberger's work has been of very great value, and marks a distinct step in our knowledge of the disease. He has shown, practically beyond

a doubt, that pellagra is vastly more prevalent in those with deficient diets of a certain sort than it is in those on normal diets. He has also shown that correcting the diet or otherwise supplying the deficiency is a tremendous aid in preventing and treating the disease. However, I believe that this is *all* that he has shown. This of itself is of inestimable value, but it does *not* prove that the whole truth is now known about the etiology of pellagra. There are many facts about pellagra which Goldberger's theory is totally inadequate to explain, and which cannot readily be harmonized with it. These facts are chiefly epidemiologic and clinical.

I have not time to go extensively into the epidemiologic history of pellagra. Anyone interested can find a full discussion of it in the recent revision of the chapter on pellagra in the Oxford Loose-Leaf Medicine. Suffice it to say that while a few sporadic cases were reported at intervals in this country perhaps from 1864 on, pellagra did not become a problem of great importance with us until 1907, when it appeared explosively with all the earmarks of a sudden epidemic in a negro insane hospital in Alabama, where 88 cases were reported by Searcy with 57 deaths. I know of no evidence that there was any radical change in the diet of the inmates of the hospital prior to the outbreak. Moreover, the disease spread like wildfire, and reports of serious epidemics quickly came in from practically all the southern states. Granting Wood's contention that about this time a radical change took place in commercial milling processes, many cases developed in those who ate corn or wheat bread made from the old style meal or flour. The dietary habits of a large part of a nation, especially of a predominantly rural population, do not radically change over night!

Another very significant fact is the way in which the disease first manifested itself—*acute* pellagra—a condition we rarely see today, often fatal in a few weeks from onset. This very strongly suggests an infectious origin. When a great epidemic disease first appears in a community, it is often notoriously hyperacute and rapidly fatal. When measles was carried aboard ship to the inhabitants of certain Pacific islands that had been isolated from the disease, the death rate among the natives of the islands is said to have been 90%. All of us remember the pandemic of influenza in 1918, and recall not only its amazingly rapid spread, but also the terrifically fulminant cases that were often seen, fatal, perhaps, within 24 hours of the onset of symptoms. So pellagra, in its first epidemic appearance in this country, spread with a rapidity and developed a virulence that we do not see today, though the recent serious increase of the disease, of which more will be said later, makes it possible that we may see these things again.

Many interesting analogies can be drawn between pellagra and tuberculosis which strengthen the infectious theory of pellagra. General malnutrition is a mighty factor in the production of tuberculosis, and adequate diet essential in its prevention and cure. Special malnutrition (a deficiency of vitamin G) is a mighty factor in the production of pellagra, and supplying the vitamin by proper diet or by dried yeast very important in its prevention and cure. Both at times are incurable. Both do better when treated early. Both used to be

more acute in a larger number of cases than they are now. Both are largely diseases of poverty, though by no means limited to the poor, and both used to attack a larger proportion of the well-to-do than they do at present. It is comparatively rare for a doctor or nurse attending either disease to contract it, whereas it is not rare for others living in the household in close contact with someone suffering from either disease to do so, yet it is very rare for all the members of a family of considerable size to contract either disease, though when pellagra first appeared in epidemic form the involvement of many persons in one household was more frequent than it is now. Tuberculosis, of course, is known to be an infection. Pellagra is not known to be as yet, but I cannot accept the view that Goldberger's work has disproved the possibility, or even the probability, of an infectious origin.

The distribution of pellagra is almost world-wide, excluding the polar regions, yet the cases attain numerical importance chiefly in warm, temperate and subtropical areas. The disease is extremely rare in certain places where one would expect it to be very common were it due solely to a dietary deficiency, e.g., China, where starvation is so rife. While large masses of the Chinese live along great rivers where fish forms an important article of diet, I am told that pellagra is just as rare far inland where animal foods of all kinds, including milk and eggs, are rarely consumed. Dr. R. M. Wilson of Korea has made a most interesting observation in that country to the effect that pellagra is almost unknown among the general population, but that every spring about 12 to 15 cases appear among the inmates of an 800 bed leper hospital with which he is associated. Dr. O. L. Miller has told me of a case which seems to me very significant, which developed, apparently for the first time, in a patient who was *known to have eaten a generous balanced diet containing plenty of meat and milk,* after six months' residence in our state orthopedic hospital.

Pellagra has increased tremendously in our state, and, indeed, in the entire southern United States, during the last five years. The mortality statistics of pellagra in North Carolina, year by year for the past decade, appeal to me as being of the utmost significance from the standpoint not only of public health, but also of etiology. Let us look at some data gathered by Dr. G. M. Cooper:

DEATHS FROM PELLAGRA IN NORTH CAROLINA

Year	*No. of Deaths*
1920	297
1921	331
1922	308
1923	224
1924	273
1925	398
1926	459
1927	712
1928	847
1929	981

In 1929, therefore, there were almost three and one-half times as many deaths from pellagra in our state as in 1920, and almost four and one-half times as many as in 1923, which had the lowest mortality from the disease of any recent year. In the past decade, therefore, while the general population of North Carolina has increased about forty or fifty per cent, the deaths from pellagra have increased about two hundred and thirty per cent. Moreover, this is by no means the whole story. An added factor of the utmost significance is that in the past decade we have wonderfully developed our state highway system, and with it our state school system, bringing education, not only in the "three Rs," but also in home economics to our people as it has never been brought before; and along with this, women's clubs have been multiplying to an extraordinary degree and county demonstration agents in home economics have been increasingly active, until our people today know how to eat properly to a degree that was not dreamed of ten years ago, yet the deaths from pellagra have increased about five times as fast as the population! Does not this point out that there *must* be some factor in the etiology of the disease in addition to the dietary one?

Many observers have noted marked benefit from the administration of arsenic, and consider this evidence of the infectious nature of pellagra. Such a conclusion should not be drawn too arbitrarily for two reasons. In the first place, arsenic at times increases appetite in various conditions, including many non-infectious ones, so it may do good by helping the pellagrin to eat the proper diet. In the second place, a great many pellagrins suffer from a Vincent's infection of the mouth. Dr. D. W. Holt of Greensboro tells me that for some time he had cultures made from the mouths of all his pellagra patients and found 100% positive for Vincent's organisms. If the stomatitis of pellagra predisposes to a Vincent's infection, and that infection in turn makes the mouth so exquisitely sore that the patient will not eat, and arsenic cures the Vincent's infection so that he does eat, that would not militate against Goldberger's theory. However, the other data already mentioned seem to me to be entirely too significant and impossible to harmonize with Goldberger's views for me to blindly accept those views in their entirety.

In the last six months of 1929 there were 156 deaths in our colored state hospital in Goldsboro, and 59 of them were due to pellagra, despite dietary treatment. However, when pellagra causes serious involvement of the central nervous system, it is notoriously difficult to cure by any means. This is another point of similarity between pellagra and tuberculosis, and also between pellagra and a number of other infections.

While there are many things to suggest that pellagra is an infection that is predisposed to by certain dietary faults, we must remember that this has not been finally proved. In some diseases the epidemiology is so convincing that other evidence is quite unnecessary to establish the infectious nature of the condition, e.g., measles, the common cold, etc. In others, while such facts as have been noted with regard to pellagra are highly suggestive, they are not absolutely and universally conclusive to our best thinkers. In such cases it is highly important that every resource be utilized to search for a specific microörganism that can

fulfill Koch's criteria. The discovery of the tubercle bacillus finally established tuberculosis as an infection beyond all shadow of doubt. No such specific organism has yet been finally established as the cause of pellagra. Many observers have thought they had isolated such an organism, only to be baffled by further contradictory evidence. The purpose of this paper is not to advance any positive and final theory of the etiology of pellagra, but to emphasize the importance of facing the fact that we have much yet to learn about this very complex subject. I am fully convinced that any theories we hold at present should be held only tentatively, and that further research is urgently needed before we can consider the etiology of pellagra as completely known.

Whatever may be the flaws in Goldberger's theory that make many of us unable to accept it in toto, he has made a very important step in the development of the prophylaxis and treatment of the disease. The importance of an adequate diet cannot be overestimated at this time, even if it will not cure all cases. Goldberger has outlined what he considers an adequate menu for the pellagrin which consists of foods readily obtainable in the southern United States. I shall not quote it in detail here—it may be found in his works published by the United States Public Health Service, and is also quoted in the revision of the Oxford Medicine pellagra chapter. Suffice it to say here that fresh lean meat and milk are the most essential foods to include in the diet. Otherwise, it should be well balanced. According to Wheeler, eggs are of less value than formerly thought.

Unfortunately, many pellagrins are very poor, and the foods most important to their welfare are relatively expensive. Fortunately we have another very rich source of vitamin G in *dried yeast*. Brewers' yeast was formerly used a great deal, but it has the almost insuperable disadvantage of having a most unpleasant taste, truly nauseating to many. I am informed, moreover, that many specimens of brewers' yeast have been found to contain dirt, hair, strings, and other foreign substances. The most palatable preparation I know of that is at once rich in the desired vitamin and inexpensive, is Fleischmann's special dried yeast put out for the prevention and treatment of pellagra. Wheeler categorically asserts that one heaping teaspoonful daily will certainly prevent pellagra. I do not know whether this statement will stand the test of time or not, but it seems worth while to use such a simple method for prophylaxis in those especially liable to pellagra, i.e., those who from poverty or other reasons are on an inadequate diet in a pellagra-ridden community. For treatment, Wheeler advises a heaping tablespoonful of this dried yeast three times a day. It can be given in almost any liquid, hot or cold, mixed with semisolid foods such as cereal gruels, or simply eaten dry. (Pass around the yeast.)

So far as drugs are concerned, arsenic is the one that has met with the most general approval, though the most orthodox followers of Goldberger are often opposed to the use of any drug in the treatment of the disease. Of the various forms of arsenic, neoarsphenamin and arsphenamin are perhaps the best. Dr. J. F. Wilson of Jacksonville, Fla., recently reported 100 cases of pellagra treated with arsphenamin. The various patients received from one to six doses of the drug, and marked

improvement was noted in 78%. Of special interest was the case of a physician's wife who had been treated by diet for four months in a hospital without benefit, who apparently recovered after two doses of the drug.

In estimating the value of any treatment of pellagra, one pitfall greatly hampers the reaching of adequate conclusions, and that is the tendency of the disease to spontaneous remissions, especially during the winter season. Practically any treatment that may be used in the fall is likely to be followed by marked improvement for the same reason that most untreated cases improve with the onset of cold weather. What that reason is, we do not know, but it is just one more point that seems to me to be out of harmony with the pure dietary theory of etiology.

The expense of neorasphenamin or arsphenamin treatment is prohibitive to many pellagrins. Other forms of arsenic, such as Fowler's solution, may be tried, but I place very little confidence in them. Therefore, while my experience with the special dried yeast above mentioned has been very limited, because I learned about it only last November, after the usual winter remission of pellagra had occurred, I believe that the rational treatment of pellagra today consists in advising an adequate diet rich in fresh lean meat (which need not be of the more expensive cuts) and milk, and adding thereto a heaping tablespoonful of dried yeast three times a day, reserving neoarsphenamin treatment for the most severe cases, for cases that fail to yield to the diet-yeast treatment, and for those who can afford the drug without severe economic inconvenience. In no case do I advise arsenic treatment without diet or yeast, unless the patient is unable to eat, and in such cases there is very little hope of success with any form of treatment.

If pellagra keeps increasing at its present rate for the next few years, in view of the poverty of the great majority of its victims, it might be worth while for the State Board of Health to consider establishing therapeutic clinics for the treatment of these pellagrins unable to pay for private treatment, and to distribute yeast free to the clinic patients, giving neoarsphenamin to those who fail to benefit from the yeast and a proper diet. I might add that this dried yeast keeps better than any other form I know of. I have kept the present sample in my office at room temperature for several months. Of course the propaganda should be continued urging every rural family to keep a milk cow. A farm without a cow is about as bad as a sawmill without a saw.

Chairman Kinlaw: There is just one more paper to be heard. We tried to arrange a symposium on pellagra. If it is agreeable to the Society, we would like to hear Dr. Hemmingway's paper and then discuss both papers together. Dr. Hemmingway!

DIAGNOSIS OF PELLAGRA

J. D. Hemingway, M.D., Gastonia, North Carolina

Pellagra was first discovered by a Spanish physician in 1735. The name pellagra came from two Italian words, meaning rough or smarting skin. One finds in addition particularly in the older literature, many other names which I shall not attempt to mention here. Pellagra is a systemic disorder characterized by symptoms of gastro-intestines and

cerebrospinal disturbances with associated cutaneous manifestation of an erythematnous and pigmentary character. There is no laboratory procedure such as the examination of the blood for a parasite, as in malaria, or the feces for ova, as in hook worm infection, which will aid in the diagnosis. So it is upon the symptomatology past and present that the physician must rely. The diagnosis of this disease when the classical symptoms dermatitis, stomatitis, diarrhea and nervous disturbances are found present little or no difficulty, but it is in those cases in which some of the above mentioned symptoms are absent or which are complicated by other diseases and test the skill of the most experienced physician.

The classic picture of this disease, once appreciated can scarcely ever pass unnoticed, or unrecognized. Cases of this clear cut type, however, constitute but a small proportion of the whole number. The main reliance in its recognition rests upon the distinctive skin eruption. It is essential therefore in the outset to possess a clear conception of the characteristics, that, taken as an ensemble, distinguish this eruption. It was once accepted as true that only skin surfaces exposed to the sunlight are affected, but discovery of the lesion on parts of the body ordinarily covered with clothing has challenged the correctness of this view, and rendered its diagnostic significance merely relative. If suspicion of pellagra arises, no part of the skin area should escape careful scrutiny. The pigmentation, the keratosis and the sharp delimitation of the lesion are its outstanding features. Of importance also is its manner of development. When the delimiting fringe is clearly marked and bi-laterally symmetrical it is almost pathognomonic although the eruption may often be quite—asymmetrical and unilateral. Tendency of the eruption to recur in the same or succeeding years is in itself suggestive, although failure to recur can not be deemed evidence against the pellagrous nature of a foregoing eruption. This skin lesion may be stimulated by "chapping of the hands," sunburn, dermatitis, senile atrophy with pigmentation, or less often by erythema multiforme and lupus erythematosus. If there be no eruption, as is sometimes true, assured recognition of Pellagra is very difficult if at all possible. Under endemic condition, in obscure cases, a presumptive diagnosis may be reached by regarding other clinical symptoms. The combination of headache, vaguely defined nervousness or melancholy, soreness or burning of the mouth, with or without a reddened tongue or buccal mucosa, may be in the absence of other apparent cause, deemed highly suggestive especially if occurring in the springtime and in a member of a household already including a pellagrin with well defined eruption. Suspicion may be further strengthened, if after adjusting the diet of such a patient by the inclusion of an abundance of animal proteins (amino-acids) eggs, milk, fresh lean meat, cheese and green fruits and vegetables and yeast, the symptoms promptly (within two weeks) begin to improve and gradually disappear without recurrence so long as adequate and appropriate feeding is maintained. This therapeutic (and prophylactic) measure should be guarded however and interpreted with caution. Contrariwise suspicion of pellagra may be ordinarily dismissed as to one who is known to be and to have been an habitual milk drinker, meat eater and

who eats green fruits and vegetables. That is to say, one who consumes in a mixed diet not less than one and one-half pints of milk and one-quarter pound of fresh lean meat daily.

There are other diseases which strikingly resemble some forms of pellagra without eruption and temporarily at least differentiation may be difficult. Pernicious Anemia so-called, and Addisons Disease may betray the unwary into error for a time. While there is danger that conditions not pellagrous may be regarded as such, there is not likely a greater danger that pellagra will escape recognition. The alert clinician will recognize the possible presence of this malady always in patients exhibiting "Melancholia," "Neurasthenia," "Chronic Indigestion" with vernal exacerbation, dysentery, diarrhea, sunburn (especially if extensive and severe after a short exposure) sore mouth, vaginitis, proctitis and obscure abdominal pains not otherwise to be explained. Generally speaking, those persons whom circumstances have deprived of food lacking in adequate (animal) protein, mineral and vitamin content particularly the fat soluble. A factor should challenge painstaking investigation if any suggestive sign of pellagra is observed.

Acrodynia is mentioned by some as a disease which may be mistaken for pellagra. This disease which is of obscure origin, begins with anorexia, nausea, vomiting and diarrhea, followed by swelling of the face, hands and feet, and injection of the conjunctivae. Soon symptoms of the nervous system develop such as prickling and burning sensations. In the beginning there is marked hyperesthesia of the extremities which is followed by anesthesia, severe pains in the extremities are characteristic. The skin manifestations make their appearances early in the form of erythematous spots, first on the hands and feet, especially on the palms and soles, and later they spread to the arms and legs and even to the trunk. The portions of the skin affected desquamate, are thickened and brownish and may even take on a black pigmentation.

Pellagra has undoubtedly been mistaken for syphilis especially before pellagra was recognized in this country. The characteristic location of the skin lesions, the absence of history or evidence of a chancre or enlarged glands, and finally the negative Wassermann test (certainly in the vast majority of cases) will serve to differentiate the two conditions.

Scurvy and leprosy have been mistaken for pellagra and vice versa but these conditions should offer little or no difficulty in differentiating when a careful history and examination are made.

There are very few conditions other than pellagra in which the classic gastro-intestinal symptoms are observed. In sprue is found a gastro-intestinal syndrome which in many respects very closely resemble that of pellagra. There is, more or less stomatitis, gastric indigestion with distention and diarrhea. In a well marked case of sprue it is impossible to differentiate the stomatitis from that of pellagra except by observing the other symptoms. The diarrhea is also of a similar nature to that of pellagra, except that it may be the stools are more copious and of a so-called yeasty consistence and the movements occur more frequently in the morning, the patient being undisturbed during the remainder of the day. This is usually not the case in pellagra, where the diarrhea is as marked during the afternoon and night as in the morn-

ing. One distinguishing feature which may be of value is the leucocyte count which in sprue is nearly always low while in pellagra it is usually increased. Finally, if a patient with pellagra be instructed to sit in the sun for a couple of hours with the backs of the hands exposed the characteristic eruption will usually develop.

Dysentery, both amebic and bacillary, may be mistaken for pellagra, and in the absence of skin manifestations in the latter may present some difficulty in differentiation. The dysenteries usually present little or no stomatitis, and as a rule are accompanied by more or less rise of temperature. Of course the findings of the ameba in the stools, while not proof positive that the patient is not suffering from pellagra in the absence of skin manifestations and typical mouth findings, should be strong presumptive evidence that the disease is dysentery without pellagra complication. The same may be said of the cultural isolation of the dysentery bacilli.

Although nervous symptoms develop in a larger percentage of cases of pellagra, there are none which are typical and which in the absence of other findings would justify a diagnosis. Further, they are usually found in the later course of the disease when other symptoms may be obtained. Thus we find disturbances of the lower tendon reflexes, ankle clonus, tremors, pain, vertigo, etc., in many other conditions than pellagra.

I wish to state that the diagnosis of pellagra on one symptom alone usually cannot be made, that the whole history and clinical findings must be considered and a diagnosis made only when the various symptoms can be reconciled to the symptom-complex of pellagra.

The first case is that of a white female twenty-one years of age, married, one child two years of age.

Family history—Father, mother, two brothers and one sister living and well.

Past history—Patient has lived in a cotton-mill town all of her life; began work in the mills when she was fifteen and had worked continuously until the onset of present illness. Living conditions were very bad, faulty diet, and irregular meals. A good portion of her work had been at night.

Present illness began in January 1929, symptoms of indigestion such as gaseous or acid eructations, discomfort after eating, epigastric or pericardial pains. The appetite was very poor and there was some loss in weight. She complained of being weak and nervous and there was some headache and dizziness, with a tired, wornout feeling. She also noticed at this time a burning sensation of the hands, neck, face and mouth, which gradually grew worse until about the first of May, when these areas took the appearance of a sunburn. She explained this by the fact that she had been exposed to the sun while washing clothes on the previous day. The failure of the sunburn, as she called it, to clear up in the course of a few days added to the fact that the soreness of the mouth and the irritation of the skin grew worse caused her to consult a physician. Until the first of May she was troubled with constipation and as the condition grew worse diarrhea set in. This woman was given parathyroid one-tenth grain t.i.d. in combination with calcium lactate

20 gr. t.i.d. after meals. This was the only treatment given. It was continued over a period of three months, with instruction as to the proper diet, at this time she was apparently well; the erythema and gastro-intestinal symptoms had disappeared and she had returned to her work in the mill.

Although the patient feels fine and is absolutely symptomless, she lost one hundred and two pounds in weight.

CHAIRMAN KINLAW: Dr. Elliott, will you open the discussion of this subject?

DR. J. A. ELLIOTT (Charlotte): I was very much interested in the case that Dr. Taylor reported. I was called in to see that patient without knowing the history and made a diagnosis of pellagra. Dr. Miller asked me why, in my opinion, that patient developed pellagra after being in the hospital for six months and on a well-balanced diet. My answer to that question was that I did not think the diet was the whole thing in the introduction of pellagra. I still believe it.

I am in thorough accord with Dr. Taylor's theory as to the production of eczema. I believe there are two main features in the production of eczema. One is that it is an infection and the other is that the patient must have a predisposing background which we spoke of in the production of eczema.

No doubt the diet has a great deal to do with the production of a suitable culture medium on which this infection, if it is an infection, grows.

Porter has pointed out that alcohol plays an important part in the production of pellagra and in his cases he says that alcoholism runs like a red streak through the history of all these cases. I am not convinced alcohol plays an important part in the production of it. It may bring down the patient's resistance where he or she is susceptible to the disease. If I thought alcohol played a very important part, I think it would be advisable for many of you to take the yeast Dr. Taylor has advocated as a preventive. (Laughter)

In addition to the treatment Dr. Taylor suggested, I think fruit juices are advisable. I believe it was Rouselle of New Orleans who advises lemons. I have found the addition of lemon juice to the diet a very valuable method of treating these cases. (Applause)

CHAIRMAN KINLAW: Will Dr. Holt continue this discussion?

DR. D. W. HOLT (Greensboro): Dr. Taylor referred to me in his paper. He got the impression that was original with me. I want to do justice to whom justice is due. That idea did not originate with me. Dr. Parker in Greensboro called my attention to it.

DR. O. S. GOODWIN (Apex): In 1928 I had a paper that was all food. Since that time I had a goodly number of men kind enough to agree with me and not many disagreed. After the paper was read and some of it discussed, Dr. Caviness of Raleigh (that was in 1928) said to me, "Goodwin, maybe it is not all food anyway. Maybe a little of it is infection. Suppose you send a smear of the gum from the patients which you think have pellagra. I will do them for you and won't charge you anything for it."

I thought that was fair enough. I made smears of all the patients I

had from then on, 1928 through 1929, and sent them to Dr. Caviness. He did them and sent the report back. I did not put the names on the smears. I only put the numbers and kept the names in my office with the numbers beside them. I did that through the rest of the summer of 1928 and 1929. Every now and then I would get a suspicious case that did not have the typical pellagra symptoms, but I sent the smear along anyway, not giving the name, keeping the number and the name in the office. We checked upon these patients. All the cases of which I could make a diagnosis of pellagra clinically showed a positive Vincent's report when the report came back from him.

I am going to retract some of the ideas I had in the paper I read before the District Medical Meeting and agree with Dr. Taylor. That was in 1928 when he was doing that work. I will coincide with the work he was doing there. I think diet has a wonderful lot to do with the cure.

Dr. D. A. Garrison (Gastonia): I lived in the time when pellagra first appeared in this country, or was supposed to have first appeared, when Dr. John Wright of Raleigh discovered a case in Catawba County and Dr. McConnell discovered one in Chester, S. C., the first two cases reported of pellagra in this country.

I went to all the conferences on pellagra that I could find and read everything on it that I could find. I got nothing out of it until Goldberger came forward with his diet treatment. That is the first thing that affected my cases and I treated a number of them. You may have Vincent bacillus there. That may exist. I have no kick on that. I have nothing to say about it, but it exists in other conditions. They do not just confine to pellagra and whenever you begin a treatment and withdraw all acids as Goldberger asks you to do, and give them plenty to eat of a balanced diet, they improve.

Let us get back to one special point. In 1920 there were 297 cases according to my friend Cooper which is correct. When he puts anything down, it is a correct proposition. Conditions in this country, in North Carolina and over the South were fine. Everybody had plenty to eat, could get what they wanted and they lived. They had a balanced diet.

Then let us start down the line. There is no increase, practically none until 1926. The working conditions to which this is confined largely begin to go down. They did not get the wages, could not get the food and they did not have the food.

The worst conditions North Carolina has seen in this great depression which extends over the country is 1929 and 1930. See where it has gone to. I will show you one thousand cases around a cotton mill where they live out of a tin can to every one you will find in the country where they have a cow and a garden. You can talk about your diet.

Dr. Taylor, I enjoyed your paper, but I did not agree with you entirely, sir. The diet plays more part than anything I know. I have watched this disease from the beginning of it and I am telling you that every one of you say to give this and that. Every one falls back to diet. Suppose you stop the diet and let them eat what they have been eating and give this treatment. It isn't worth a single thing. That is my can-

did opinion. You have to diet them. You have to take care of them and you have to feed them. Whenever you give one of them a balanced diet you are not going to get pellagra because I tell you I have been through the university of experience in that, and that is where I got it from. (Applause)

Dr. Otho B. Ross (Charlotte): Mr. Chairman, I want to congratulate the section on having Dr. Taylor to present this subject, and also Dr. Hemmingway. The state should feel highly honored in having a man like Dr. Taylor to be asked to write a section in the Oxford Medicine, as he has been. I think it is a distinct honor to the state.

I am glad he and Dr. Elliott emphasized the idea of diet and I certainly agree with Dr. Elliott that the use of fruit juices seems to be helpful in pellagra. I did want to ask Dr. Taylor as to whether or not Fleischmann's yeast is a killed yeast. Since the advertising of yeast on the market so lavishly, I have had a great deal of difficulty in gastro-intestinal cases with the Fleischmann's yeast where it was not a killed yeast because of the marked amount of fermentation that is brought on. If it is not a killed yeast, I am afraid we will have a great deal of difficulty with it.

Incidentally, may I remark that in treating pellagra by the use of fruit juices with the brewers' yeast, I think it can be made very palatable and taken without a great deal of difficulty by patients. I do not mean to advertise anything, but have used Harris' brewers' yeast. Harris, by the way, is a son of the founder of the medical school at the University of North Carolina and manufactures a high class of vitamins and very high class of purified yeast.

Dr. A. J. Crowell (Charlotte): I do not wish to discuss the pellagra, but inasmuch as the State Board of Health has been referred to, I hope to be permitted to say just a word along that line. I am very zealous for the greatest usefulness of the State Board of Health possible. It is not the work of the State Board of Health to practice medicine. It was not created with an idea of practicing medicine, but to prevent the preventable diseases. That has two phases—one educational and the second, finding and assisting the medical profession to obliterate the source of disease.

The educational work in the importance of taking care of tonsils, adenoids, defects of the child has gone far enough. We have gone forward in that work. We have not done the medical profession any harm. On the other hand, we believe we have done them good, in that we have found these defects and sent them to the men who do eye, ear, nose and throat work, the defects in hearing, tonsils, teeth and all defects in children.

They have been taking case of this work where it was possible for them to do so. Our work has been largely in the rural counties where they do not have a whole-time eye, ear, nose and throat specialist and where they have not had hospitals, improvised hospitals.

We think the work in the schools, the inspection, should go on. The doctor cannot go out and hunt up these defects, but the public health workers can, and can send them to the doctors. The suggestion of establishing clinics to take care of indigent pellagra cases, I think, is

wishing a little too much on the State Board of Health. We will go out and find them for you, and I know you will be willing to coöperate with us and treat these cases of pellagra, not only pellagra, but any other contagious or infectious outbreak that may occur from time to time. We hope that you won't wish on us any clinics to treat pellagra. I am sure you are perfectly willing to do that yourselves. (Applause)

Dr. W. W. Johnston (Manteo): I don't know that there is anything I can say that will add to this able discussion. I have been very much interested in Dr. Taylor's paper and the following discussions. I just want to make a few remarks regarding some cases that I have had and my limited experience in the treatment of pellagra.

As to the etiology of the disease, that has been discussed. I do not think it need be discussed further. We don't know just exactly what the exhaustive factor is. But it has come to my mind that it might be possible that we might have a balanced diet, that the individual might eat of the balanced diet and for some unknown reason could not assimilate this diet and developed pellagra.

I want to report or give a brief description of about four cases that have come under my observation. One is a man about 40 years old, bedridden when I first saw him. He had a severe diarrhea and extreme nervous symptoms, and could not sleep. He could scarcely eat anything at all without the greatest discomfort. I put that man on the diet —proteins, fresh vegetables and brewers' yeast.

I wish to say the brand of yeast I have been using was put out by the Vitamin Food Company of Westfield, Mass. They put out a debittered product. This man at first did not get much improvement. He discontinued his treatment. He grew worse. He took up the treatment again and stuck more closely to it until he was able to be out at work.

The next case was a woman who had been diagnosed for pellagra seven years previous to the time I saw her. I put her on the same treatment. I saw her daughter not long ago. She told me I would not know her mother she had gained in flesh so much, and appeared to be perfectly well.

The next two cases are the most interesting. They are children, one a child two years old, and the other a child eight months old, brother and sister. By the way, I wrote to Dr. Goldberger concerning these two children and he suggested that I report them which I never have done. That has been several years ago.

The first little fellow started with typical lesions on hands and feet and around the neck. That progressed to the point that he was practically sore all over his body as though he had a severe case of the worst kind of eczema. I put him on the same treatment. He improved and cleared up all right. I could not keep him on it. I could not control the parents. The child died. The second child of the same family went the same way. Both children, by the way, were fed on Eagle Brand Condensed Milk.

Practically the only drugs I have used were some form of arsenic, usually Fowler solution with some other tonic, iron, or what-not. I don't think it makes much difference.

Another interesting thing to me concerning this is that I have had

several patients who indulge in alcohol very frequently. They developed the same symptoms and the same lesions as in pellagra. I should like to ask the section if they have had similar experience regarding alcohol, and the youngest children mentioned.

Dr. F. L. Ray (Charlotte): We had something like 100 or 110 patients last year. Out of that crowd we had five men. The rest were women. Most of them were mothers with nursing babies. We distributed three thousand pounds of Fleischmann's yeast. We did not use brewers' yeast. We could not afford to buy it. The city bought it, paid for it and distributed it. We did not lose any patient except one. Those who took the rations we prescribed got well.

One reason I think this thing is a dietetic business is that when I was in Japan we had beri-beri and to beri-beri we gave fluid extract of teki-teki. I believe it is an economic condition because every one we could feed we gave liver and cheap white salmon. Every one that had a fair chance got well.

Chairman Kinlaw: I will ask Dr. Taylor to close the discussion.

Dr. F. R. Taylor: I have been very pleased with the discussion that has followed this paper.

In reply to Dr. Garrison I can say that in the first place I have tried to emphasize the importance of diet and yeast in the treatment. In fact, vitamin deficiency is a potent factor in the production of pellagra. I am only questioning whether it is the whole story. If you stop your diet in pellagra, I know what will happen and it will happen just as surely if you stop the diet in tuberculosis which we know to be an infection.

I had an interesting discussion with Dr. Wheeler. I think we talked about six hours in Miami. He is one of the heroes of medicine. He swallowed pellagra feces in capsules, transfused himself with the blood from patients dying of pellagra. He has done everything under the sun that he could think of to give himself pellagra. He has not been able to do it. Of course, he is a 100 per cent Goldberger man. Yet I can conceive of all those things being done in tuberculosis without transmitting the disease. I don't think it is proved.

I am rather glad here to be able to quote, although it will not apply to everyone as it did to him, a man whom I revere as the greatest clinical teacher under whom I ever studied, Dr. David Reisman of the University of Pennsylvania. I sent him a copy of my paper and I want to read this sentence from a letter. The rest is about other matters. "As far as I can tell, your arguments for an infection as a cause of pellagra are unanswerable." However, there are probably those who do not feel that way about it and surely as I say, we must simply take a tentative viewpoint, keep an open mind for further light on this matter.

In reply to Dr. Ross, I do not know whether it is killed yeast or not, but I know this: I have kept this yeast in room temperature in my office since November and it apparently has not spoiled or soured. For that reason I think it will keep well anyway, which is the point you had in mind, as I see it. If you will write the Standard Brands, Inc., of New York City, they are the successors to the Fleischmann's Yeast Company. They will tell you about that. They have a research bureau.

I was not trying to foist something on the State Board of Health exactly. I simply say I would be very, very glad to treat all poor pellagrins who come into my care. When they tell me that they cannot buy the yeast and food, I do not know how in the Sam Hill to do it. That is the proposition we are up against. If in its wisdom the State Board does not feel that it is the right thing, and in cases of those who can pay for anything, I should not be the one to try to urge it. But if they are engaged particularly in prophylaxis, if it is demonstrated that this yeast will keep which brewers' so often will not, if they could make plans to distribute this yeast to those who cannot get it otherwise as a prophylactic measure, it might be a very valuable procedure. But I am not going to attempt to dictate in any way to the State Board of Health.

Someone asked me about hydrochloric acid in the stomach. Sometimes it is deficient and there you want to give it. That gastric analysis is notoriously unreliable in telling you what you have. In two tubes at the same time you won't get the same finding. I don't know what the gastric analysis tells you.

Dr. Johnston's point about the lack of assimilation is the best argument the Goldberger outfit has. I will admit it is by far the best. The only reply I have to that is in the first place, it may be true in some cases. It may be the explanation. Even if it is an infection it may be the reason why some people who eat good food get pellagra, but it does not explain to me why in 1907 we had pellagra first (there were a few sporadic cases before that) that the population suddenly began to be unable to assimilate in such large numbers or changed their diet so radically in that year.

As to economic conditions, that is all true in a great measure. Again, it is just as true as you will find with regard to tuberculosis. If you want to see the tuberculosis death rate shoot up in countries where they had the most perfect control of tuberculosis, not absolutely perfect, but the most perfect the world has ever seen in Central Europe, look what happened when the World War got them so they could not get enough to eat. It sure went up. I don't think it is conclusive, but worth thinking about.

There is one other point that I have no right to speak on except that a friend of mine in the U. S. Public Health Service (I cannot use his name; he asked me not to because it might conflict with some of his superior officers) expressed to me some months ago the idea that he thought that I was not only right about pellagra, but made this remark, "Ten years ago I would have categorically stated beri-beri was due exclusively to a deficiency of vitamin on account of the polished rice diet. I am beginning to get evidence that suggests to me that beri-beri may be an infection that develops very seldom except in those predisposed to the disease by a lack of that vitamin."

I don't know anything about beri-beri myself. We have all been taught that it is nothing but a disease due to eating polished rice, the absence of vitamin B. Here comes a man who has been working in the Public Health Service and thinks even that it may be an infection. We know certain diseases of plants which are known to be parasitic do not develop when phosphates or potash are put in the soil. So the food con-

tent has something to do with the susceptibility to infection. That is at present my viewpoint on the theory of pellagra. As I say, we do not know it all and we have to keep an open mind and be ready to change our views with the increase of knowledge. Thank you. (Applause)

CHAIRMAN KINLAW: We have next to elect a Chairman.

DR. F. R. TAYLOR: We heard a very, very good paper today from a man outstanding in ability, and a man who, I think, would be a great credit to this section as Chairman next year and if it is in order, I would like to nominate Dr. William B. Dewar, of Raleigh. I would like to second the nomination, he has already been nominated. I move we elect him by acclamation.

The motion was voted upon and carried.

CHAIRMAN KINLAW: As Chairman this year, I would like to thank all authors for their papers. I want to say that I know we have had excellent attendance for the medical section, and I think it was because we did have such a splendid program. When Dr. DeWar writes you, or you write him, for a place on the program, I am sure he can assure you a good audience for the paper, because it is bad to work all year to prepare something good for the State Medical meeting and then have about fifteen or twenty men to listen to you.

MEMBER: I would like to make a suggestion to the new Chairman for next year, that we have a room that is large enough to give everybody a seat. Why don't they move over into the ballroom?

DR TAYLOR: I would like to suggest also that we make a resolution in this body that next year we have a place where we can have a reasonable degree of peace and quiet. We can ask everybody in the hall not to talk, but it is very hard to talk against that racket outside. It is nobody's fault, of course, except that the place where we are meeting is not properly constructed for our purpose.

CHAIRMAN KINLAW: The new Chairman will please take that up early in the year, with the Secretary and the President.

This year I was lucky enough to get in three papers before the General Session. So the Medical Section really gets recognition and a total of ten papers. I think it is the first time we have had more than one paper before the General Session. I feel that Medicine certainly is entitled to a whole-day meeting like this—having three days, with the Practice of Medicine stuck into about three hours will never do. That is my personal feeling, and I know from the letters I have received, there are a lot of others who feel the same way about it.

Is there any other business to come before this session?

I hope all of you will gather in the ballroom at 9:30 o'clock. Now you may shake the kinks out of your legs; I know some of you are very tired.

The meeting adjourned at 5:30 o'clock.

SECTION ON EYE, EAR, NOSE AND THROAT

Dr. V. M. Hicks, *Chairman,* Raleigh

The Section on Eye, Ear, Nose and Throat met in the men's cardroom of the Carolina Hotel on Tuesday, April 29, 1930, and was called to order at 2:45 P. M. by the Chairman, Dr. V. M. Hicks.

Chairman Hicks announced that the Secretary of the Section, Dr. V. K. Hart, was unable to be present, being abroad.

CHAIRMAN'S ADDRESS

PERSONAL OBSERVATIONS OF THE CAUSES AND PREVENTION OF BLINDNESS IN NORTH CAROLINA

V. M. Hicks, M.D., Raleigh

Because of lack of time and also lack of detailed information I shall confine my remarks to a brief survey of our white blind school, and shall endeavor to draw some conclusions from these statistical reports.

May I remind you at this time that students at the Blind Institute are confined to those children of public school age who are so blind that they cannot carry on public school work in the seeing school. At the same time they must have a normal or practically normal mental development, otherwise they are sent to the school for feeble-minded at Kinston. This point has a bearing on what we will presently say about hereditary blindness. At the present time we have 151 students at the white blind school, of this number accidental blindness accounts for 15, blindness from such diseases as pneumonia, influenza, measles, typhoid fever, brain fever and whooping cough account for 11. Gonorrheal ophthalmia is supposed to account for 12, but I am of the personal opinion that this number is too high. Blindness due to syphilis accounts for 5. Of the remaining number, roughly, about 100 or two-thirds of the entire population were born blind. Of this number 57 or over one-third of the entire population can be definitely grouped under the heading of hereditary blindness. Perhaps a good many more should be classed under this head, but lack of proper information at this time prevents us from doing so.

It seems to me that if there be a group of individuals in our State especially interested in the cause and prevention of blindness in North Carolina, it should be the members of this Section. We are frequently called upon in our routine practice to deal with these cases of hopeless blindness, to say the least, they are most unsatisfactory to deal with, for the reason that in most instances the disease is irreparable and although the relatives of such patients look to us with a keen hope, we know that in practically every instance that we must send them away disappointed and perhaps with a feeling that we should know more about our subject than we have demonstrated. In most of these cases

we are dealing with hereditary ocular degeneration and as a matter of fact we are only called upon to certify that certain group of cells vital to the visual function have become extinct. It may be the optic nerve, retina choroid or the cornea, or any combination of these. All that we can say is that they are dead. We are in the same position as is the general practitioner who is called upon to recognize the signs and declare an individual dead. From this brief survey, if we are to render any service, it must begin by a study of hereditary ocular degenerations. For the sake of simplicity and brevity I have classed these hereditary ocular defects in two classes: (1) Anatomic imperfections, as exemplified by aniridia and colomba; (2) Degenerative diseases, as exemplified by retinitis pigmentosa, cataract, optic atrophy, family choroiditis, degenerations of the cornea, etc.

In these degenerative conditions why is it true that these particular groups of cells disintegrate and come to an early death? Sir William Gower suggests that it is due to a lack of vital force in the structures involved so that they are unable to maintain their nutrition beyond full development and, therefore, gradually fail and degenerate. He says they fail from imperfect life which is called, by E. Streacher Collins, abiotic atrophy or abiotrophy. To quote Collins further: "The term vital force, in the way in which it is here used, may be defined as 'a force the possession of which differentiates living from dead matter.'" Though we know little as to its real nature, it is convenient to have a name to apply to it, just as in algebra we use a symbol to represent an unknown quantity. This vital force, as we know it, exists only in connection with cell protoplasm, and manifests itself by what we term irritability. For its maintenance, the cells possessing it require the capacity of taking up certain substances from the fluid media surrounding them, and of discharging other waste products—a process probably capable of a physicochemical explanation.

Now if we consider these degenerative conditions as due to this lack of vital force, then we must further conclude that it is an inherited deficiency. Inherited ocular defects are of two kinds, either dominant or recessive. From my study it seems evident that aniridia and colomba are dominant: by dominant we mean, for example, that if aniridia exists in a child, one of its parents must have had the same condition. This is not so with the recessive types of conditions, which under our previous classification we have designated as the degenerative diseases.

By these charts I am sure you have already concluded that in the dominant types we can very easily rid the State of their existence, by sterilization. In the recessive types this would only be partially successful unless all members of a family who carry this power of transmission are sterilized. I am personally of the opinion that it is the duty of the State, at least, to make a comprehensive investigation into this problem. It seems to me that it is the only way of reducing our present blind population. Many of our present blind students are children of men and women who have been educated in our blind schools. This ought not to be so. Of one thing I am certain, that until the medical profession itself takes some definite position we cannot expect the State to do so. Allow me to mention one other type or

classification of children born blind. Animal experimentation definitely shows that the eyes are unusually susceptible to changes affecting the nutrition of the mother. This is best demonstrated by removing from the diet during pregnancy, vitamin A. The offspring of such animals are very apt to show ocular degenerations. The most common of which are an unusual thinning of the sclera, anteriorstaphyloma and corneal degenerations, this undoubtedly accounts for a certain number of our children born blind. As far as the treatment of these degenerative conditions is concerned, I feel sure that we are all agreed as to the hopelessness of the situation. There are none of us who are willing to undertake to revive degenerated dead tissue. I feel that the members of this Section should undertake to acquaint the medical profession in their various communities with this marital and inherited problem. I am constantly being surprised in finding various individuals, not only laymen, but also medical men who are laboring under the impression that the majority of our blind children are blind either from gonorrhea or syphilis. Nothing could be farther from the truth. There is a general feeling amongst lay people that it is a profound disgrace to have a child born blind. The same attitude once existed toward the cropping out of insanity in a family. Public education has largely done away with such a notion and we should be responsible for this happening in the case of hereditary blindness. I realize that it is entirely within the realm of possibility. I may be wrong about my position about hereditary blindness, but if I am, I am perfectly willing to correct it, but if my position is sound I feel that we as members of this Section should accept this challenge in the great field of preventive medicine.

DIFFUSE OSTEOMYELITIS OF THE FRONTAL BONE

Dr. F. E. Motley, Charlotte

INTRODUCTION

Osteomyelitis of the frontal bone is one of the most serious of all the complications of frontal sinus infections. In reading over all the literature, one is struck immediately by the high mortality rate reported.

Dr. A. E. Bulson, of Fort Wayne, Indiana, in the 1925 *Transactions of the American Academy of Ophthalmology, Otology and Larnygology,* gives a most detailed, accurate, and comprehensive report of all the cases, and a review of the literature for the previous thirty years. About fifty-five case reports could be collected from the literature from 1895 to 1925. Since that time there have been several cases reported, which would bring the total to approximately seventy-five.

PATHOLOGY

MacKenzie states that the frontal bone may receive its infection from the frontal sinus mucous membrane: First, by direct extension to the osseous spaces (both canalicular and medullary) of the bony sinus wall; second, by primary infection of efferent veins of the lining mucosa of the sinus, with subsequent infection of the bone from these veins. There may be a combination of the above means of infection.

Regarding the macroscopic pathology, we can do no better than quote from Bulson's translation of Guisez: "At the onset of the infection there is intense congestion resulting in the dilatation of the blood vessels and augmentation of the soft osseous element. As in all microbic inflammations, considerable leukocytosis develops. This brings about a hyperemia of periosteum going on to the formation of hemorrhagic foci, and at the same time an inflammatory sub-periostal edema becomes evident, which rapidly denudes the bone by producing sub-periostal abscesses from both its surfaces. The internal abscess is extradural and lies between the internal periosteum and the bone itself. This process is characteristic of osteomyelitis of the cranial bones. The pus content of the abscesses is thick, greenish, sticky, and loaded with pyogenic organisms. Within the bony substances it produces little osseous abscesses, distending the Haversian canals and destroying the bony lamellae."

In our own experience the anterior wall of the frontal sinus was the first area to be attacked. At operation the superficial tissues were markedly engorged and edematous, sub-periostal abscesses met with, and sequestra of various sizes were encountered. The dura was involved in three cases and there was an intracranial extension (brain abscess) in two of these. The diploetic spaces were filled with granulation tissue and pus, free pus oozing from the bone when seized with bone forceps. There were areas of erosion met with, some of which involved the entire thickness of the bone, others involving either the external or internal plates. In three of the cases there was marked discoloration of the bone. One of the most striking features of the disease is that comparatively large areas of sound bone are found dividing islands of granulation tissue and intense osteitis. In the majority of cases that have been reported—both frontal sinuses were involved.

Because of the richer blood supply and increase in diploetic spaces, osteomyelitis of the frontal bones occur more often in children and young adults. This fact is borne out in our cases as may be noted.

SIGNS AND SYMPTOMS

The usual signs and symptoms of frontal sinus infection are practically always present. In all of our cases there was swelling of the upper eye-lid, edema of the orbital tissue and superficial tissues of the forehead, and there was tenderness over the area of frontal sinus ininvolved. Transillumination of the involved sinus was dull. Pus appeared under the anterior end of the middle turbinate after cleansing the nose and irrigation of the antrum on the same side. Constant severe, unilateral headache was present in every instance. Elevation of temperature, leukocytosis, secondary anemia and other generalized signs of sepsis were present. In our cases, there was a distinct swollen ridge extending up from the nose, between the eye-brows, to the hair line. No attention has been called to this sign in any of the previous literature and it was present and very distinct in each case. This swollen ridge was decidedly tender to palpation. X-ray has proved of great value to us, but does not always disclose early changes.

CLASSIFICATION AND REPORT OF FOUR CASES

(a) Two cases of localized osteomyelitis of the frontal bone secondary to acute frontal sinusitis with rupture into the orbit (brain abscess complicating).

Case 1. The patient, a boy ten years old, came in with a typical left acute pan-sinusitis following swimming. Because of a spinal fluid cell count of one hundred and evident fluctuating abscess of the orbit, a Lynch type of operation was done. Several small sequestrations were found which were thought to be from the floor of the frontal sinus. The ethmoid was exenterated and sphenoid opened wide. The wound was left open. During the following six weeks it was necessary to operate three times for removal of necrotic bone and granulations. The infecting organisms were reported as Staphylococcus. During the sixth week after his first admission the pulse gradually slowed down below sixty and the eye grounds showed some choking. At this time a two-stage operation for drainage of the brain abscess of the frontal lobe was done, the Mosher wire cone brain drain being used. Except for temporary brain herniation for two weeks, there was an uneventful recovery, and he has remained well for the two and one-half years following his operation.

Case 2. The patient, a woman twenty-nine years of age, was admitted with a bilateral sub-acute pan-sinusitis. She had been under the care of a general surgeon for two months previous to her visit and had had a fluctuating abscess over the right eye incised. She had been having a daily temperature of 105 and had several severe chills. There were two fistula above the right eye in addition to the usual signs of bilateral pan-sinusitis. There was a central ridge of swelling which was tender to touch extending from the root of the nose to the hair line. X-ray showed purulent involvement of all the sinuses but no evidence of osteomyelitis. A Lynch type of operation was done under local anethesia on both sinuses. The ethmoids were exenterated and sphenoids opened wide. Pus under marked pressure was found along with necrotic mucous membrane. Two bony sequestra were found involving the floor of the right frontal sinus. The patient's general condition was fair following the operation, except for some slight mental change at one time and a rather sporadic temperature. At one time the patient showed disorientation for one-half hour. There was persistent complaint of slight headache. The possibility of brain abscess and osteomyelitis of the frontal bone was seriously considered, but X-ray, neurological examination, eye findings and spinal fluids were repeatedly negative; so the patient was dismissed from the hospital nine weeks after admission and told to report in one week's time.

Two days later she was brought in unconscious. Under ether anesthesia, a wide exposure of the frontal bone was made. Two extremely large sequestrations were found. An epidural abscess was found on the right, and a brain abscess with an extremely thick wall was found in the right frontal lobe. The Mosher wire cone brain drain was used. The infection was due to streptococcus. For several days the patient was in an extremely dangerous condition. After this the patient rallied and made an uneventful recovery. She has remained well for about one year.

(b) Osteomyelitis of the frontal bone following chronic infection of the frontal sinus.

Case 3. The patient, a very large Negro man about forty-five years of age, came in on account of marked swelling of the tissues of the left orbit. He gave a history of having had an upper molar tooth extracted several months before. There had been some discharge from the left nostril.

Examination—Temperature 99. Marked swelling of the left orbit, fixation of the eye. Irrigation of the left antrum revealed a small amount of thick foul pus. Pus could be seen coming from a mass of polypoid tissue under the anterior end of the middle turbinate. Blood Wassermann negative. Negative marital history for syphilis (twelve living children, no miscarriages).

Under local anesthesia, an incision was made through the eye-brow and a considerable amount of straw-colored fluid with several thick clots of pus was obtained. The bone of the supra-orbital ridge was bare and discolored. More radical operative procedure was advised but was refused. Due to the fact that the orbital swelling rapidly subsided, the patient did not return for several weeks. At this time he presented practically the same picture he did at the first examination and the old incision was reopened with the same result. The patient has not been seen since that time. X-ray showed evidence of bone infection and clouding of the frontal sinus on the left. Organism not cultured.

(c) Fulminating diffuse osteomyelitis of the frontal bone.

Case 4. The patient, a male thirty-two years of age, gave a history of a previous antrum operation on the left three years ago. Five weeks previous to examination the patient had an anterior ethmoidectomy on the left in an effort to establish intranasal drainage for a chronic frontal sinus infection. When admitted he was suffering severe pain around the left eye.

Examination revealed marked swelling of the tissues of the left orbit. The patient believed this followed irrigation of the frontal sinus a few days following his ethmoid operation. The patient had an acute nasopharyngitis. There has been a previous ethmoidectomy and radical antrum on the left. Thick pus could be seen pouring from the left naso-frontal duct region. There was a marked swelling extending from the base of the nose up to the midline of the forehead, which was extremely tender. In spite of conservative local treatment, the tissues of the left orbit continued to swell. Under local anesthesia, a large orbital abscess was drained through a small incision in the upper lid. Patient continued to run a temperature and complained of a constant headache. Altrough the orbital abscess subsided, the temperature continued to range from about 100 to 103.

About two weeks following his first examination, operative interference was advised. An extensive osteomyelitis process was found involving the entire left frontal bone. Areas of granulation tissue and necrotic bone were found with some islands of apparently normal bone between. The medullary substance showed areas of granulation tissue, some of the diploetic spaces were broken down, and free pus was encountered in spaces between the inner and outer plates. Two large

epidural abscesses were found. It was necessary to remove practically all of the left frontal bone. As in the previous operative cases, the incision was left wide open and packed with iodoform gauze, after the entire wound was carefully cleaned and painted with iodine. Two small sequestrations were thrown off from the outer lower area of the wound. Daily dressings, Quartz lamp therapy, and careful general treatment was carried out.

After two later plastic operations—done for cosmetic reason—this patient has been entirely well for eighteen months.

Case 5. The patient, a young man of twenty-six years, was seen in consultation. About one month previous to his examination a small furuncle in the nasal vestibule was incised and squeezed. There was a prompt swelling of the tissues of the right face with marked rise in temperature in a few hours. Although a localized sub-periostal abscess was drained in a few days in the left cheek, a rapid sequence of serious symptoms followed: There was edema of both eyelids—followed by swelling of the soft tissues of the forehead—extending from the eye-brows gradually over the entire occiput. Small localized abscesses filled with thick, necrotic material and pus formed in a great many places over the entire cranium. Wide drainage was instituted. In spite of all treatment the temperature stayed from 102 to 105. Staphylococcus was found as the infecting organism and a vaccine promptly made and used. A high caloric diet was given, means of increasing elimination and raising the resistance of the patient were used in addition to transfusion and adequate surgical drainage.

At the time of my consultation during the fourth week, there was present a purulent infection of frontal sinus on the right and the left antrum. Doubtless this occurred at the same time the cranial bones were involved. Sinus surgery was not deemed advisable due to the extremely weakened condition of the patient.

Death followed several days later. X-rays were not obtained and the diagnosis was made on clinical examination.

TREATMENT

In so far as treatment is concerned, there is a marked difference of opinion. One group of men do only conservative work and remove sequestra as they are found, and disturb the infection but little. Such men as Doctors Trey, Tawse, Mosher, and Skillern are among those who lean toward the conservative method of treatment. On the other hand, Doctors Bulson, MacKenzie, Lilly, Shea, and practically all the foreign writers advise radical surgical measures, and their stand in this controversy is best illustrated from an article by MacKenzie, i.e., "Once osteomyelitis of the frontal bone has set in, the only means of saving the patient's life is by removal of the diseased bone."

In addition to these schools, there is another group of men who follow a middle course in which their operative procedure could probably best be classed as moderately radical. Doctors Yerger, Callfas and others follow the last line of treatment. In our own series of four cases, radical measures that have been done have been forced by complications which necessitated radical removal of bone. It is our opinion that the diseased bone should be carefully and cleanly removed

to the limit of the incision and to where the periosteum has been elevated; exposure and drying of the tissues should be avoided, careful technique should be used, and above all ample drainage of the infected area. Large bony defects after operation have been partly filled in by osseous regeneration. (IV)

PROGNOSIS

The prognosis in these cases is always grave. Of the fifty-five cases collected by Bulson in all the literature up to 1925, but eighteen recovered. Regardless of the method of treatment used, whether conservative, moderately radical or radical, the incidence of mortality is extremely high. The patient should be kept under observation from six months to a year on account of the frequency of recurrence after apparent cure.

The bacteriology of osteomyelitis is of important prognostic value. Staphylococcus infections are the least dangerous, while infections due to streptococcus and pneumococcus most frequently are reported as fatal in outcome.

CONCLUSIONS

1. The comparative rarity of this disease (we feel) warrants the report of these four cases.
2. In our experience, the moderately radical surgical means gave three cures.
3. In addition to clinical signs, the X-ray gave us most valuable help.
4. Helio-therapy was used as a post-operative adjunct.
5. The Mosher-Cahill wire cone brain drain was used with excellent results in the two cases of complicating brain abscess.

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DISCUSSION

Dr. Edward B. Clement, Salisbury: Dr. Motley in his paper made a statement which we have all adhered to for many years; that is, that the staphylococcus organism is the least virulent and the least dangerous. Sometime ago I had a case of frontal-sinus involvement, and the bacteriologist sent me in a report of staphylococcus hemolyticus. Of course, I at once took up the matter with him to find out about it. I had been taught about the streptococcus hemolyticus but had never heard of the staphylococcus hemolyticus. I also looked it up in the literature and found that the streptococcus hemolyticus does not, as a rule, attack the bone as much as it does other tissues. It is the staphylococcus hemolyticus that usually causes hemolysis and causes the

danger. This case that I had died from the extension through under the periosteum, and it was reported as staphylococcus hemolyticus.

In thinking this matter over, I think a great many of us do not realize or do not take into consideration early enough our bacteriological examinations or the organisms with which we are dealing. If we are dealing with staphylococcus, and it causes hemolysis, and we have a good laboratory man to examine it, our treatment should be directed toward bony tissue a great deal more than toward the intravenous therapy or other things, as it would be if it were the streptococcus. The patient I spoke of died; and I believe if I had realized what organism I was dealing with and had gone in further and made a larger incision across his frontal bone I would have found the source of the infection. It came under the periosteum and extended over his scalp, and he died purely from septicemia.

In mastoiditis the laboratory may report streptococcus, hemolyticus, but I think in a great many of these cases it is staphylococcus. I should like to hear from some of the laboratory men further on this question, because to me it is of the utmost importance.

Dr. J. G. Murphy, Wilmington: I received a letter from a little town down near my home sometime ago addressed to "Dr. J. G. Murphy, 'Optimist,' Wilmington." I was exceedingly proud of that letter. I have always wanted to be considered an optimist, and now I have the evidence.

I have a case in the hospital now in its fifth week, or I believe perhaps longer than that, with osteomyelitis of the frontal. Well, we had a nice funeral all arranged for him from about three weeks ago to about ten days ago, but since then I have been a little bit hopeful. All those who have spoken so far, however, have discouraged me in my optimism about this patient, and I do not know whether he is going to recover or not. We did as radical surgery as we could. His symptoms improved the more radically we went in, and now his symptoms are somewhat better. We have given him three transfusions. I think the turning point is there; if he lives it will be because of the boosting of those transfusions. I am still optimistic, though I may have to reverse myself on him.

Dr. Motley, closing the discussion: Dr. Clement, there is one case of streptococcus in this group and three cases of staphylococcus, and the Negro patient did not have a culture made—did not report back in. The one case of streptococcus died. I think it was staphylococcus albus; I do not think there was an aureus among these cases.

I hope Dr. Murphy is right in being an optimist. I thank you.

OBSERVATIONS ON THE FORMATION OF THE MACULAR STAR IN NON-RENAL CASES

F. Phinizy Calhoun, M.D., Atlanta, Ga.

It is commonly known that the macular star is frequently observed in conditions other than nephritis.

From an ophthalmoscopic examination, it is often difficult to differentiate the *true* from the *false* type of "albuminuric retinitis," except

for the vascular changes in the retina, which accompany the true type. This same difficulty follows in the histo-pathological examination (Verhoeff).

We must then agree with Frost, "that our present knowledge of retinal exudates points to the conclusion that identical ophthalmoscopic appearances may be due to different pathological processes."

My interest in the subject is due to the fact that I was able early to observe and follow to a termination several cases, and to have satisfactorily explained to me the formation of this macular star, by a theory which I fear has never been duly appreciated. I refer to an article by Mr. Marcus Cunn, "On the changes in the macula associated with retinal inflammations and edema," published in 1894.

Case 1. *Bilateral neuro-retinitis, with macular stars; paralysis right abducens; suspected acute hyperpituitarism.*

K. W., female, age 14, seen July 1, 1922, complained of double vision for two days, and bad sight in the right eye for three weeks. There was present a right sixth nerve paralysis, and marked bilateral neuro-retinal edema, with a few unsymmetrical macular exudates in each eye. The vision was less than 20/200. On account of an obesity (150 pounds) and a history of amenorrhoea, a hypophyseal lesion was suspected.

The history revealed vomiting spells at the onset, but no headache, convulsion, polyuria or polydypsia.

A general and neurological examination was negative, except that the thyroid was enlarged.

The urine, the spinal fluid and blood chemistry were normal. The blood and spinal Wassermann were negative. The X-ray showed an enlarged sella, with indistinct clinoid processes. The floor appeared eroded. There was a convolutional atrophy and diastasis of the sutures, as noted in increased pressure.

The *eye examination* (July 10, 1922). The right disc was blurred, rings and cup absent, the vessels ran evenly across. The veins were slightly distended. The arteries were normal. A connective tissue veil was noted over the disc. Along the course of the superior temporal vessels, 3 d.d. from the disc, was an indistinct area of edema, in which the veins were lost. In the macular region was a perfectly formed star with a clear reddish center. Surrounding the disc were several crescent-shaped exudates with other scattered exudates of irregular form. In some places these exudates looked like impressions on the retina from the chorio-capillaris. They were all placed in the deeper retinal layers. There were no hemorrhages. The left eye was similar.

Two months later the vision was normal. The exudates had almost entirely absorbed. Extending from the disc towards the macula were seen two brownish lines, resembling angioid streaks, which may have been blood in the perivascular spaces of the short posterior ciliary vessels, as suggested by Treacher Collins.

Two years later vision was normal, and menstruation was established. Fine macular changes were detected and the connective tissue veil over the disc was still present.

Comment. Delayed menstruation, increase in weight, enlarged thyroid and sella, with the eye findings, strongly suggested an acute hypophyseal swelling, causing increased intracranial pressure and its attendant papilledema.

Not until the neuro-retinal edema had subsided, relieved largely by spinal drainage, did the exudates appear in number, or assume a stellate arrangement in the macula, or crescent forms around the disc.

Case 2. *Bilateral neuro-retinitis, with macular stars; nephritis from toxaemia of pregnancy.*

E. N., age 30, complained of defective vision in both eyes since the birth of her last child three months previous.

There had been six pregnancies, two of which were miscarriages.

In the last confinement the labor was normal and she was attended by a midwife. Several days before confinement she complained of dizziness and headaches, and on the second day following labor, she could only see light.

The physical examination was negative except for a sub-involuted uterus. The blood pressure was 185/120.

The urine contained albumin and hyaline casts, and the specific gravity was 1030.

The *eye examination.* V. R. fingers at 3 feet. V. L. 10/200. The discs surrounding retina showed edema. There were a few flame-like hemorrhages along the larger vessels. While the maculae were involved, the right was worse, for it contained a perfectly formed star, with a glistening yellow center. Scattered throughout the retina and extending far into the periphery were numerous glistening punctate opacities, all of which were in the deeper layer of the retina. One month later vision had improved to R. 15/200, L. 15/30; the edema had completely subsided and the exudates were absorbing. Rapid improvement was being noted in the urine and blood pressure.

Comment. It is very probable that marked intraocular changes existed prior to confinement. The fact that the exudates were in the deeper layers of the retina, and that there was present a deep central macular exudate, suggested an involvement of the choroid, common in "pregnancy retinitis."

Case 3. *Bilateral papillitis, with a macular star; hypophyseal syphilis.*

S. W., unmarried female, age 24, complained of defective vision of two months duration. The outstanding facts in the history were: (1) increase in weight from 190 pounds at the age of 18 to the present weight of 255 pounds; (2) polyuria; (3) polydipsia; (4) bitemporal headaches; (5) irregular and scant menstruation for 5 years; (6) anaphrodisia.

From a careful physical and neurological examination it was agreed that there was definite evidence of an hypophyseal disturbance without hemianopsia.

The eye examination showed a swelling of the right disc of 5 D; on account of formation of new tissue on the disc, it was interpreted that this edema had existed for sometime. There were a few small hemorrhages above the disc and a few yellowish dots arranged in radiat-

ing lines in the macular region. There was no pigmentation in the chorio-retina suggesting congenital syphilis. The left disc was less swollen, and the retina was free of hemorrhages, exudates and pigmentation. Following a subtemporal decompression, at which time a ventricular drainage was made (the fluid giving a strongly positive Wassermann reaction), the macular star increased in the right eye as the retinal and nerve edema subsided. No exudates formed in the left eye. During convalescence an acute plastic iritis developed in the left eye and several months later a mild serous uveitis. Under antiluetic treatment and glandular feeding, vision was regained and many of the symptoms comprising Frohlich's syndrome improved.

Comment. It is noted that the macular star had formed in the presence of a papillitis, and as the edema subsided, aided by drainage and decompression, the figure increased, then finally absorbed. A papilledema superimposed upon a papillitis may have been the double picture consequent to a dual intracranial disorder of cerebral syphilis involving the hypophysis.

Case 4. *Unilateral neuro-retinal edema, with macular star; suspected incomplete thrombosis and endocrine imbalance.*

J. W., female, age 13, seen April 9, 1921.

The complaint was impaired vision of five days duration in the left eye. The fundus picture then seen was that of a low-grade neuro-retinitis, with a few scattered macular exudates. At the age of six, following scarlet fever, a mild endocarditis and nephritis developed. Sugar was detected in the urine in 1919. She had just commenced to menstruate, with a scant flow every two weeks, at which time she was nervous and complained of headaches. A recent refraction found the eyes normal.

The physical examination was normal. All laboratory reports of the urine, blood and spinal fluids were negative, as were the X-ray examinations of the sella and sinuses.

The *eye examination* April 16, 1921, V.R. 20/20, fields, media and fundus were normal. V.L. L.P. The disc was edematous. The temporal side was more swollen, from which ran several small vessels. The veins were slightly full and totuous. The retina between the disc and macula was edematous. There was a complete macular star with central exudate. No hemorrhage was seen.

In July the vision had improved to 20/50 and by September it was 20/20 with a normal retina.

The day before the menstruation in May she became blind in the right eye. The following day when the flow had begun, vision was restored. The attack was regarded as hysterical.

Comment. While admittedly headache and an unestablished menstruation is meager evidence upon which to base a diagnosis of endocrine imbalance, I venture the explanation that in certain of these cases toxic substances are produced which affect the vascular supply in the nerve head, adjacent choroid or retina. This explanation is quite in keeping with the retinal hemorrhages frequently seen at the time of menstruation, at adolescence or at the menopause.

Case 5. *Bilateral papilledema, macular stars; suspected cerebellar tumor.*

W. M. I., age 6, complained of failing vision of ten days duration, preceding which there had been attacks of vomiting and headache. A staggering gait and falling to the right were the only positive findings. The blood and spinal Wassermann were negative and the urine normal. The X-ray of the skull was negative.

The eye examination revealed bilateral papilledema. The veins were full and tortuous; there were a few splotches of hemorrhage near the discs, and in the macular region were a few scattered exudates. Vision was light perception.

The day following the spinal drainage, which greatly relieved the headache and reduced the swelling of the discs, there appeared a shower of exudates in each macular region, which assumed a stellate arrangement.

An operation was suggested, but declined, and when last seen, the exudates were slowly absorbing and the disc was undergoing an atrophy.

Case 6. *Commotio retinae, macular hemorrhage, incomplete macular star.*

W. G., age 11, was struck with a rock in the right eye. After one week, when the hemorrhage had absorbed from the anterior chamber and vitreous, there was seen a dark reddish area in the region of the fovea. The nasal side of the macula was slightly edematous, and it contained five or six rays of exudates. These exudates finally absorbed, but vision was permanently impaired from the macular hemorrhage.

PATHOLOGY AND MODE OF FORMATION OF THE STAR

Since the macular star in non-renal cases usually subsides and vision is restored, specimens for study are rare. Naturally, then, do we seek a comparative study from another source, namely, true albuminuric retinitis.

It is generally agreed that what are termed retinal exudates occur in the inner and outer nuclear layers with a gangliform degeneration of the nerve fibers. The serum escapes from the vessels, the plasma forms, and coagulation takes place with the formation of the white patches. It is debatable whether these patches are dependent upon this coagulated albuminous plastic lymph or from the fat globules derived from the breaking down of the retinal elements or the degeneration of the products of inflammation and edema. It does seem that, if the patches do not rapidly absorb, the fibrin therein contained contracts with age, a degeneration takes place with the deposit of fat and crystals. Edema is an all-important part in the formation of these exudates, from which, Parsons thinks, they are entirely derived, and that cholesterin and other crystals form as a degenerative change late in the picture.

Verhoeff, examining the eyes from cases of brain tumor and nephritis, both containing edema and exudates, found little variation in the histopathology. Sclerotic changes were noted more frequently in the vessels of the renal cases, which explains the modified picture

seen ophthalmoscopically, that is the retina in renal cases is thus given less power to resist changes resulting from edema.

The formation of the macular star is a subject of controversy. Whether the exudates form along the radiating fibers in the outer nuclear and reticular layers, as advocated by Dimmer, or along the capillaries which penetrate to the outer reticular layer and converge toward the fovea, is a matter of personal interpretation. Weeks calls attention to the fact that the radiating cone fibers of Henle do not extend beyond the macula, whereas the stellate rays do go further.

Marcus Gunn explained their formation by mechanical means. He argued that the macula, except at the fovea, is capable of unusual distention with fluid, for there the retina is thicker than elsewhere and its interstices wider. If the swelling or edema into the retina is slow in forming, the peripheral swelling would fade into the normal surrounding retina, but if sudden or if plastic in nature, then there would form a well defined circular edge around the edematous area, like a fold or a crease.

When the macula is involved, the edema is arrested at the fovea, for there the outer cone segments are well attached to the pigment epithelium. This pegging down of the center of the loose swollen retina which has taken place in all directions, will tend to produce fine folds radiating from the fovea. It is along these folds or creases that exudates form, augmented by the capillary vessels of the macula converging towards the fovea.

These creases then determine the chief collection and coagulation of exudation and the degenerative processes in the retina, because where they exist the nutrition is lowered. This mechanism of causing the retina to crease, has been compared to the drawing of a handkerchief through a ring.

In keeping with what has been said about the formation of deep macular exudates may be mentioned the delicate radiating lines or reflexes (seen best with brilliant or red free illumination) which are located in the retina around the disc and especially in the macular region. These lines are interpreted by von de Heydt as being folds in the external limiting membrane of the retina. This layer is frequently separated from the nerve fibre layer in cases of retinal edema induced by ocular concussion, exudative retinitis, thrombosis or ebolism, and as the edema subsides folds in this anterior retinal layer are first recognized. They finally disappear.

Discussion. From the foregoing it is seen that an edema of the retina (and often the choroid) is essential for the formation of the macular star. This edema may be fairly general as in a chorio-retinitis of pregnancy with the formation of a complete star, or localized to a part of the macular region as in retinal thrombosis or commotio retinae, with an incomplete star.

During the period of maximum edema, a few non-symmetrical exudates may form in or near the macula, but as the swelling subsides other exudates rapidly appear. This would suggest that albuminous exudates do not coagulate or, at least, degeneration does not take place in the presence of fluid.

If these exudates are dependent upon an edema, why then do they not occur in all cases of retinal edema? This may be explained by the variability in the interstitial structure of the retina, the various degrees of edema, the rapidity of its onset, and the causes. One naturally thinks of some toxic alteration of the blood, as in pregnancy retinitis, and it may play its part in the formation of the exudates, but the edema is the all-important factor.

The fact that the exudates are seen in the deeper layers of the retina has led me to believe that the choroid is as frequently and as severely involved. Statistics rather substantiate this statement, for the macular star formed in 30% of the cases of pregnancy chorio-retinitis, and in only 8% of the cases of brain tumor showing papilledema.*

It would seem, then, that damage to the chorio-retinal elements and the formation of the macular star is not necessarily a direct consequence of a general disease, but to a local disturbance (edema), brought about by various conditions, (1) local, as in trauma, (2) remotely local as in brain tumor, and (3) general, as in nephritis or chlorosis.

Of the various conditions in which the macular stars form, increased intra-cranial pressure is the most common. Nettleship observed its frequency in children, in which the increased intra-cranial pressure was due to congenital central lues. Likewise in connection with cerebral edema, Gibson reported finding the star in the eyes of several children suffering from plumbism.

The literature abounds in the report of cases, and attention to only a few important groups seems necessary: Thus from circulatory disturbances of the retina (thrombosis especially) Frost and Darmstadt mention the induced secondary changes in the retina similar to an "edematous effusion." Neubner reports two interesting cases of infection about the lid and temple with the formation of macular stars in the affected eye. An orbital infection with possibly an optic neuritis or a thrombosis must have existed, although they were not mentioned. Trauma to the skull and globe are also recorded by Leber and Hartridge respectively, and retinal edema dependent upon anemia and chlorosis especially, with well formed stars are frequently noted (Reese, Angstein, and Sallman). Finally, there is a small group occurring in girls or young women, as in Case IV, in which no definite cause can be assigned.

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In Cushing's series of 200 cases of brain tumor, the star was observed 18 times; a combined total of 8 per cent.

The changes in the chorio-retina incident to a toxaemia of pregnancy may be in part induced by a cerebral edema, with its corresponding elevation in pressure. As to the frequency of the macular star in these cases, Schiötz observed them 12 times in 40 cases. A pathologically enlarged and shiny fovea was frequently seen and indicated a choroidal disturbance.

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DISCUSSION

Dr. James M. Parrott (Kinston): Certainly I do not arise, Mr. Chairman, to discuss Dr. Calhoun's paper. I want to assure you, Dr. Calhoun, that the reason the men are not discussing it is because they are like me, they hesitate to give expression to their views in the presence of as learned and distinguished a gentleman as yourself. We appreciate your coming to us, and I take this opportunity to express my appreciation to you personally. You have given us a very interesting paper—interesting for two reasons; first for the skill with which the subject was presented, and second (but not least) because of the charming manner of the essayist.

LIPIODOL AS AN AID TO DIAGNOSIS IN DISEASES OF THE MAXILLARY SINUSES

R. S. Beam, M.D., F.A.C.S., Lumberton

In diseases of the maxillary sinuses, as elsewhere, a practical question which always confronts us is: what treatment procedure should we recommend; is the case one for operation, and what type of operation should be performed? This question is always more easily answered if we are able to determine with some degree of certainty the actual contents of the sinus. The mere presence of pus or other fluids in the sinus

does not of necessity demand operation; in fact the acutely infected cases other than those in the antrum from dental origin, do very well frequently without operative interference.

In many cases large polypi or cysts can be demonstrated by radiographs alone, however, it is often not possible, for one reason or another, to tell from a shadow on the X-ray film the exact pathology within the sinus. It may be pus or other fluid or it may be thickened mucosa, polypi, granulations, etc., the so called plastic type. Even the healed sinus with perfectly restored mucous membrane may show radiographic changes.

Much of this doubt can be eliminated by measuring the free space within the cavity. This can be easily done by the injection of roentgen-opaque solutions after all fluids have been removed. For the last two years this practice has been very helpful to me and while not practiced routinely, in many cases it has enabled me to come to early conclusions, which could not have been arrived at, at the time, without this additional information. There are several preparations that can be used for this purpose but, and for reasons not necessary to go into, in this paper, lipiodol seems to have the advantage over the others.

The technique is very simple. The cavity can be punctured through the inferior meatus and the fluids removed by aspiration or perfectly opened with the trochar or rasp and irrigated, after which the sinus can be dried by suction. The lipiodol is then diluted, one part to two of petrolatom, and injected through a small canula into the sinus; the nostril is then packed with cotton beneath the middle and lower turbinate bones to prevent the escape of the solution through the natural osteum and the opening through the inferior meatus. The amount of this solution prepared for each sinus, should be about six c.c. as the normal antrum holds from three to five c.c. Care should be taken against imperfections in technique as too much force in injecting this solution may flatten out polypi and granulations, and retained fluid products of inflammation will give an erroneous impression. After the radiograms are taken, which should be both antero-posterio and lateral, the solution can be removed from the cavity by irrigation, or it can be left in without producing any ill effect.

DISCUSSION

Dr. M. R. Gibson (Raleigh): There is one point I think Dr. Beam is not perfectly clear about. In my opinion lipiodol gives the greatest benefit in showing the amount of tissue between the space occupied by the lipiodol and the wall. My understanding is that if the lipiodol fills the cavity then you have a case that very easily might be treated with very little radical work. But if you have a very small cavity, if the lipiodol is right in the center then the wall is covered on every side, or if it is on either side then there is a good deal of tissue on the other side that ought to be removed. It may be a polypus or a number of polypi, or it may be degenerated tissue in there. My impression is that what we want to know is whether there is a great deal of bad tissue in there to be removed and if there is a likelihood of removing that without operation.

Dr. F. E. Motley (Charlotte): It seems to me there are too many possibilities of error to make lipiodol as extremely accurate as some of the enthusiasts would like to make us think. I congratulate Dr. Beam on being one of the first to work with lipiodol, and I am not myself opposed to it. In many things I think it can give us a great deal of help, but I do not think it should be used as a routine measure. I did not understand whether Dr. Beam did or did not use it as a routine measure. I understand that many of the leading men disagree on the use of lipiodol. Faul ————, of New York, made the flat statement in a recent article that he could see no benefit to be derived from its use. I do feel that if good X-ray technic is used and if the X-ray picture is properly taken the percentage of error will be very small and will average just about the same as the best lipiodol technic. I have seen a number of cases that had lipiodol used and had lipiodol injected under the mucous membrane of the antrum. Many of the men say there is no danger in it, but these patients were rather uncomfortable. Perhaps the proper technic was not used; I did not use it, and I do not know. But there are too many loopholes. It leaves one rather in a haze as to what method to use. I think there are so many imperfections in the use of it that before it can become a routine measure those things should be smoothed out.

Dr. Beam (closing the discussion): In regard to Dr. Gibson's comment, I did not want to take up the time in the differential diagnosis of what this space between the lipiodol and the walls of the sinus might be. If the technic is perfect, there is no question about that space being filled up with something other than fluid, and one man can draw his conclusions as well as another as to what that might be, so for that reason I did not discuss that point at all.

In my paper I made the statement that in the last two years this practice has been very helpful to me; and, while not practiced routinely, in many cases it has enabled me to come to early conclusions.

There are several methods of making the injection. The lipiodol might be injected between the mucous membrane and the periosteum lining the wall of the sinus, but this can almost always be prevented by using a cannula for making the opening under the inferior meatus. Some use a needle and others a cannula.

The X-ray pictures that I showed here are very few of them satisfactory pictures; that is the reason they are representative pictures. Most of the pictures I showed were of old people, asthmatics, people in whom it was very difficult to get satisfactory pictures.

This technic can be perfect. In many of these cases the diagnosis has been confirmed by operation, and in no case have I found it in error. Some people may be perfectly satisfied from the symptoms, clinical findings, and X-ray examination; but frankly, over a period of seventeen years, doing a lot of sinus cases, working with the X-ray machine, etc., I am not satisfied. I have a few pictures right now that you can look at, and you will have to know more about X-ray pictures than I do to see what the pathology is. A lot of those cases have been operated on. After all, it is just a little help, a little thing to resort to when in doubt.

THE INDICATIONS FOR ENUCLEATION IN TRAUMATIC IRIDOCYCLITIS

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Because of industrial and other causes of injury to eyes, the danger of sympathetic ophthalmia and the question of enucleation arise fairly frequently.

According to McKee (1) quoting Gradle and Schirmer, the first available reference to the fact that internal disease of one eye may cause a lesion in the other was by Bartisch in 1582. Bartisch stated that injury to one eye might be followed by shrinking of the eye ball and pain, "And in this case the other eye is in great danger." In 1840, McKenzie (2) first named and formally described the disease. He said, "Whenever I see sympathetic ophthalmia, even in the first stage, I know that I have to contend with an affection, which, however slight its present symptoms may be, is one of the most dangerous inflammations to which the organ of vision is exposed." In 1854 and 1863, Pritchard and Critchett, respectively, urged enucleation as curative and preventive of sympathetic ophthalmia.

Numerous ingenious theories have been advanced as to how inflammation passes from the primarily injured or "exciting" eye to the secondarily affected or "sympathizing" eye. None of these theories, however, have been proved and no specific causative agent has been isolated. That the presence of, and hypersensitiveness to uveal pigment is necessary to the development of sympathetic ophthalmia, and that immunity to uveal pigment can be produced, has been demonstrated in certain cases. (3, 4, 5) The prophylactic and therapeutic use of uveal pigment in regard to sympathetic ophthalmia (6) deserves further study.

In our present state of knowledge, an important fact to bear in mind is that, in almost all cases, sympathetic ophthalmia is the result of a penetrating wound of the bulbus oculi followed by iridocyclitis. Foreign bodies frequently produce such wounds. Operative wounds where the eyeball is opened are also included in the above category. Penetrating wounds involving the ciliary region are quite likely to produce an iridocyclitis; hence, they are usually regarded as being particularly dangerous. Beside the usual causes, sympathetic ophthalmia is known to follow sarcoma, mycosis, (7) and cysticercus of the interior of the eye, ossification, calcification, or dislocation of the lens, ossification or calcification of the iris and ciliary body, blows on the eye without external wound, and certain other rare causes. (8)

As an aid to prognosis and treatment it is important to recall the extreme rarity of sympathetic ophthalmia after: (9) (a) Suppuration of the cornea as in ulsus surpena or gonorrheal ophthalmia, even though perforation of the ulcer and staphyloma of the cornea or phthisis bulbi may follow; (b) Panophthalmitis and resulting phthisis bulbi; (c) Sympathetic ophthalmia never occurs in absolute glaucoma.

The period which may elapse between injury to the exciting eye and

the development of inflammation in the sympathizing eye varies. The shortest recorded time is four days, (9) whereas no limit can be set to the maximum period. The longest reported interval is forty-eight years. (10) As a rule the most dangerous period for the development of sympathetic ophthalmia is when the iridocyclitis in the exciting eye is at its height," usually four to eight weeks after the injury.

Should the injured eye become quiet, sympathetic trouble with the other eye is not to be expected unless iridocyclitis should recur in the injured eye. The return of inflammation may not take place for many months or years, but in each such recurrence danger to the sound eye returns with all its original gravity.

Generally speaking, there is no danger of sympathetic ophthalmia from a penetrating wound unless an iridocyclitis results. But most penetrating wounds are followed by an iridocyclitis, and these cases should be watched carefully from day to day. Vision, tension, visual fields or projection, fundus examination, pain, photophobia, tenderness, redness, and cyclitic deposits (signs of sympathetic inflammation) should be observed in the injured eye. Vision, visual fields, paresis of accommodation, beginning myopia, (12) photophobia or actual pain (signs of sympathetic irritation) should be noted in the sound eye. It is important to realize that if *any objective* signs of inflammation appear in the secondary eye, it is no longer a case of irritation but one of actual sympathetic inflammation. Differential white counts for mononuclear increase may be noted while the patient is on conservative treatment. Their value is questionable.

The conservative treatment of iridocyclitis in the primarily injured eye is of great importance but space prohibits discussion of it here.

Many circumstances must be taken into account in each case; but if in the sound eye there should occur any of the irritative symptoms above stated; or, if in the injured eye the above named inflammatory signs and symptoms should become accentuated; and, especially if the vision continues to fail, the tension diminishes, or the projection becomes faulty, and these conditions become more and more marked in spite of conservative treatment, enucleation should be done before the end of the third week. If, on the contrary, some vision should be preserved, the tension and projection remaining normal, with no increase in the other symptoms and signs, we may continue to temporize. Especially is this true if the iridocyclitis tends to subside.

Fortunately, in most cases, the decision is aided by the condition of the injured eye. While it is proper to retain an injured eye with a subsiding iridocyclitis and normal tension for a period longer than three or even five weeks, it usually happens that an eye in which a traumatic iridocyclitis has evinced no tendency to subside, will become blind, for all practical purposes, before the end of three weeks. (13)

An eye that has once been the seat of a traumatic iridocyclitis and has become quiet is, generally speaking, safe; safe, so long as it remains quiet. But such eyes are liable to recurrent attacks of inflammation, and in any one of these recurrent attacks sympathetic ophthalmia may develop. For this reason, an eye that has been blinded by a penetrating injury, even though it be quiet when first seen, is better out of the head (Swanzy).

Sympathetic "irritation" and sympathetic "inflammation" should be sharply differentiated. (14) If sympathetic irritation be present in the sympathizing eye, the injured eye should be enucleated immediately. However, if the exciting eye has any useful vision, it is a mistake to enucleate it after sympathetic inflammation has occurred in the sympathizing eye, for after the sympathetic disease has run its course, the sympathizing eye may have the worse vision of the two. If all sight has been destroyed in the exciting eye, it should be removed even after sympathetic ophthalmia has developed for treatment of the latter may be facilitated thereby. (15) Practically, except in mild cases, the removal of the exciting eye usually has little effect on the progress of the disease if it has already developed in the sympathizing eye. (16) Moreover, it is unwise to wait for the appearance of signs of sympathetic irritation before performing enucleation, for sometimes these signs merge into those of sympathetic inflammation which may occur "without any intermediary symptoms at all and quite unforeseen." (19)

The foreign bodies which most frequently lodge in the eyeball are pieces of steel. These can generally be removed by the magnet. The foreign body being removed, if the iridocyclitis which it is likely to produce gradually subsides completely, the eye may safely be left in the head. However, should the inflammation continue, as is frequently the case after the removal of the foreign body, and evince no tendency to subside by the end of three weeks, the eye should be enucleated.

Here, again, our decision is generally greatly facilitated by the fact that before the end of three weeks such an eye usually becomes blind, frequently with diminished tension. In regard to foreign bodies other than steel, which as a rule, cannot be extracted, the treatment varies. Where the vision is good and all inflammatory symptoms have subsided in the injured eye, it may be allowed to remain with the understanding that, if, at any time an iridocyclitis should recur, danger to the other eye will exist, and the injured eye should be enucleated.

COMMENT

The application of the general principles regarding enucleation in traumatic iridocyclitis in a common sense manner to the individual patient calls for discriminating judgment and constitutes one of the most valuable services which the physician can render.

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DISCUSSION

Dr. J. G. Johnston (Charlotte): In the discussion of this paper, of course, we have to take into consideration the injured eye as well as the good eye, or vice versa—the good eye as well as the injured. Dr. Asbill has told us in no uncertain terms how to deal with the injured eye, how to take care of it and what to do with it. It is a rather remarkable thing that an injury to one eye may start up a disease in the other eye which exactly resembles that in the first eye; it is more strange when we go over that patient and find no other morbid change than that in the eye. This makes it more necessary that we be able to recognize the condition which brings about sympathetic ophthalmia—the condition which may produce it. It is peculiar that we do not know exactly what causes it, or what causes it to become active; but we do know that under certain circumstances it will become active and cause blindness. There are three conditions under which this may operate and cause blindness in the other eye, and one or more of these must be operating in the eye at the time. The first of these necessary requirements is that the capsule of the injured eye must have been opened through all of its coats. Many times (or sometimes, at least) we have a sympathetic ophthalmia following an injury in which we do not see a

complete opening of the capsule, but on good authority we know there has been no account of sympathetic ophthalmia following an injury to the eye in which there was not at least a microscopic injury to the whole capsule through all its coats. The second thing that is necessary for it to take place is that this injured eye must at some time have suffered from a plastic uveitis. This uveitis may have been at a more or less recent date; or it may have been so long in the past as to become almost a memory; becoming chronic it has been forgotten, almost, but has been lying there ready to come to life at this injury. The third necessary condition is more rare. It is rare, as Dr. Asbill said, for sympathetic ophthalmia to follow ulcer of the cornea, but it does happen, as it also sometimes follows secondary cataract operation.

The dangers of a sympathetic ophthalmia are well known, and they are very real, but they must not be overestimated. Foster estimates that all the injuries, perforating injuries, infected ones, will result in only from one to three per cent of sympathetic opthalmia. Men are more subject to this than women, of course, because of the larger number of accidents. Children, however, are very susceptible. Foster found twenty-five per cent of perforating injuries to the eyeball to be in children from one to ten years old. What causes this condition or infection to travel from one eye to the other is a mooted question. Some think it crosses from the sheath of the optic nerve, crossing at the commissure; some think it travels through the blood stream. Everybody discusses it, but nobody seems to know exactly what it is.

Dr. Asbill has given us a good paper, one that is well worth remembering, and one that I have thoroughly enjoyed.

BILATERAL EXTRAOCULAR FINDINGS AND EOSINOPHILIA IN VINCENT'S ANGINA OF THE MOUTH

H. C. Neblett, M.D., Charlotte

In the literature dealing with Vincent's angina of the oral cavity no mention is made of eye symptoms, except some complaints of a dull pain of moderate degree behind the globes, or a sensation of pressure about the eyes and face. Exceptionally a mild conjunctivitis may be present. My observations have been in accord with the above findings as noted from the following. In France during the recent war I had occasion to observe an acute epidemic of Vincent's infection in the mouths of several hundred soldiers, and subsequently have seen some three or four minor epidemics, and a fair number of isolated cases. Casual reference is made in the literature to the finding of a slight to moderate eosinophilia in an occasional case, but only in the presence of either pulmonary or intestinal complications.

The only specific instance of this finding, in the absence of complications, in Vincent's angina of the oral cavity is by Franz Peter (in the German Medical Weekly, volume 49, page 279-80, March 2, 1923), who reports a patient showing an eosinophilia of 11% at the acme of the infection. This gradually lessened with the subsidence of the disease. When convalescence was fully established the eosinophilia was 3%. In his survey of the literature on the subject he was unable to find any mention of eosinophilia.

Case report: On September 5, 1929, a white youth, aged 17, employee of a knitting mill, was referred for examination of his eyes. Past history was negative for serious illness, specific disease, asthma, intestinal parasites, and injury, except he suffered a simple fracture of both bones of the right forearm on August 26, 1929, while cranking a car. Present history: For three or four months had suffered with inflamed gums which bleed easily when brushing the teeth. On September 1 patient awoke with a dull general headache, toothache left lower jaw with some swelling of the tissues at the site of a defective molar, and bilateral oedema of the lids with moderate ecchymosis of the bulbar conjunctiva. On September 2 and 3 there was an increase in the oedema and ecchymosis, and in addition to this were malaise, fever, and chilly sensations. By noon of the latter date toothache became severe, and the involved molar was extracted under local anesthesia. During the afternoon and evening of the following day there were high fever, profuse sweats, chilly sensations, and marked increase in the eye symptoms. Examination: Appearance that of a well nourished, well developed individual, but showing signs of toxic absorption. There were marked bilateral oedema and ecchymosis of the lids and bulbar conjunctiva, and moderate oedema of the face. The cornea, pupil, vision, tension, position and excursion of both globes were normal. No pain, tenderness, nor evidence of active inflammation within the orbital cavities, or in the tissues of either eye, or of the lids. No glandular involvement either local or general, except in the lymphatic channels which drained the area at the site of the infected molar. There was no skin disease present, no petechial hemorrhages or areas of oedema elsewhere in the body, nor findings indicative of trichinosis. The nose, throat, ears, and sinuses were negative for pathology. The heart and chest were normal, and blood pressure 115-62. The gums were severely ulcerated and bled freely on slight friction, tongue heavily coated and breath fetid. Temperature 102 F., pulse 134, respiration 22. Under a mydriatic the media and fundus of both eyes were negative for pathology and for evidence of increased intraocular tension. The only symptom complained of was a moderately severe dull headache, and a sensation of pressure about the face and eyes. There were no complications relative to the fractured arm. Laboratory findings: Smear from the mouth lesions were positive for the fusiform bacillus and spirochete of Vincent, both of which were present in great numbers, but negative for syphilis and diphtheria. Smear and culture from the conjunctival sacs were negative for specific organisms. The urine, feces, blood Wassermann, and blood culture were negative on two successive periods at five day intervals. The blood picture on September 6 showed white cells 7,400, red cells 4,970,000, hemoglobin 100%, polymorphonuclear leucocytes 65, lymphocytes 12, eosinophiles 23%. No malarial parasites found. On September 11 white cells were 19,600, red cells 4,800,000, hemoglobin 90%, polymorphonuclear leucocytes 59, lymphocytes 16, eosinophiles 25%. No malarial parasites present. X-rays of the jaws showed considerable absorption of the peridental membrane and bony processes around all teeth. Progress: There was no perceptible change in the patient's local or general condition between September 5 and 11, al-

though the oral infection had been under daily treatment since he was first seen. However, continued treatment applied thereto resulted in its progressive improvement, together with a gradual lessening of the eye symptoms, fever, and constitutional disturbances. On September 22 oedema of the lids and conjunctivae had entirely disappeared, and on September 30 ecchymosis of these structures was no longer present. The patient was again examined in December, 1929, and in February, 1930. On both dates his general physical condition was excellent, his mouth appeared to be healthy, and the vision and interior of both eyes were normal. A final blood count when last seen in February showed polymorphonuclear leucocytes 57, lymphocytes 40, eosinophiles 3%.

Summary: The Vincent's infection in this case presented no unusual symptoms per se. However, the oedema and ecchymosis of the extra-ocular structures, and the high percentage of eosinophiles are of special interest, in that such findings have not been previously reported, except as noted by Peter relative to eosinophilia only. In neither his case nor this one could be found any other condition which would have produced the special features mentioned. In view of the fact that these were coeval with the oral infection, that as one advanced so advanced the other, each reaching its greatest intesnsity at the acme of the disease, and subsiding with it, it is concluded that they resulted from the oral infection.

Another feature of interest in Peter's case was that the eosinophilia was both general and local, and maintained a corresponding ratio throughout the period of the infection, subsiding in like manner with its abatement. He holds that "should this finding be manifested in other cases, especially where smear preparations showing fusiform bacilli and spirochetes are not decisive, it would be of differential diagnostic value in prompt determination of the presence of Vincent's angina as against syphilis and diphtheria of the oral cavity; since in the latter diseases fusiform rods, and various types of spirochetes often appear in considerable numbers; but a local eosinophilia is not found in either, and the blood picture in the acute stages of these diseases show a normal eosinophilia incidence." The question of a local eosinophilia was not considered in my case. However, this subject is now under investigation in other cases of Vincent's angina with the purpose in view of definitely establishing its presence or absence as a clinical entity.

It is worthy of note that the literature makes frequent mention of the dangers of extracting teeth in the presence of an oral infection. Serious complications and some fatalities have occurred following this procedure. In the writer's case this was no doubt a factor in greatly augmenting an already existing toxemia.

In the great volume of literature on Vincent's angina brief mention is made that the infection occasionally attacks the lids, and the contents of the orbit, by transference of infective material from the mouth. In these tissues it has a marked tendency to develop gangrene with disastrous results. In operations upon the lids and other structures of the eye, in the presence of this infection in the oral cavity, this possibility is worthy of some consideration.

Assuming the eye symptoms and eosinophilia in this patient were

the result of the Vincent's infection, a careful investigation to eliminate such a possibility would seem to be warranted where pathology, either acute or chronic and of doubtful or unknown origin, is present in the eye. Also in patients whom repeated blood analyses show an eosinophilia, in which the etiology is undetermined, a Vincent's infection of the oral cavity should be considered.

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DISCUSSION

Dr. J. M. Lilly (Fayetteville): The literature on Vincent's angina is very voluminous, but on these two particular points in connection with Vincent's angina there is a great scarcity of literature—in fact, almost none. I wish to admit in the beginning that I had not had my attention called to an eosinophilia nor to eye symptoms in connection with Vincent's angina until I read this paper. True, in the last few years a great deal of work has been done on the pathology caused by this particular class of organisms and on the treatment of these particular conditions by arsphenamin. As long ago as 1905, I think, ——————, of New York City, reported mastoiditis in which the middle ear and the mastoid cells were infected with Vincent's organisms. The case ended fatally. Three years ago a similar case was reported by Ives of New York. Very recently three cases of middle-ear infection that showed these organisms were reported by two observers in New York City, Barenburg(?) and Lewis.

If I understand Dr. Neblett's paper aright, there was no actual infection of the ocular tissues; the laboratory did not show the organisms in the conjunctival sac. It seems to me, that being the case, he has made a clear case that the condition which reached its height as the Vincent's reached its height and subsided as it did was too severe to be a result of just the slight febrile condition. Then, in regard to the eosinophilia, there are a few conditions in which we find that almost constant—intestinal parasites, bronchial asthma, and malaria. The conditions in which we usually find eosinophilia being ruled out in his laboratory findings, it would be strongly suggestive that the eosinophilia was due to the Vincent's. It occurred to me, however, in thinking over the question, that since all forms of —————— are due to allergy, and since the ocular condition was not due to Vincent's organisms, perhaps this was allergy or protein sensitization on the part of that particular individual from the toxins formed by the Vincent's organisms. I think it would be an interesting thing for those seeing a large number of cases to follow them up from a diagnostic standpoint, differentiating from other conditions—syphilis, diphtheria, and tuberculosis; it would be very interesting to notice the development of laboratory work in these cases in the future, particularly in blood examination. I was able to

find in our hospital that only in five cases was anything like careful work done; in fact, only five were made hospital cases. In four blood examinations were done, and of the four two had an eosinophilia of eight per cent. The other work, ruling out intestinal parasites, was not reported in those cases, and I do not know whether that was done or not. The only thing I shall lay stress on is what Dr. Neblett mentioned—that if an eosinophilia is very constant in Vincent's angina it is a very valuable aid in differential diagnosis from these other conditions that do not have the eosinophilia.

Dr. F. C. Smith (Charlotte): I want to bring up a case that was somewhat similar in that both eyes were involved and in that the patient had an eosinophilia of from twenty to thirty per cent and has had it for the last three months. This man came in to see Dr. Sloan one night with definite exophthalmia in one eye and inflammation in both eyes. His temperature was 102. The question was whether he was developing a frontal sinus, with thrombosis. He was not, because the temperature went down in two or three days. We found out that he had had two weeks before that time some sausage which he said was not properly cooked and that he had a regular habit of eating steamed ham for lunch. It must have been trichinosis. That man had gone for two or three months with an eosinophilia. That is a case which to my mind is positive. I remember in the *American Journal* fourteen cases reported, and out of those twelve had eye symptoms. It is possible in this case that the treatment he received prevented the muscular pains. All the laboratory tests and everything else we could think of was gone over, but we could not make a diagnosis. It must be either parasites or anaphylaxis. I understand that sometimes we do get an eosinophilia for a long time after an anaphylactic reaction.

Dr. Sowers: I feel that a good deal of the discussion has hinged on the question of easinophilia. What I want to say is in the form of a question. Are the extra-ocular symptoms that you find in these cases characteristic of this specific type of infection or just the same as you would find in other types of infection of the face or mouth? Does it come purely from the Vincent's? We find oftentimes infections about the face and mouth that produce extra-ocular symptoms, and I want to ask whether this is characteristic of Vincent's.

Dr. R. S. Beam (Lumberton): Two or three writers have mentioned neo-arsphenamin as treatment. I should like to ask Dr. Neblett, in his closing discussion, to state whether or not he gets any results from neo-arsphenamin. It has been very disappointing to me.

Dr. Neblett (closing the discussion): I wish to thank Dr. Smith for bringing out a point I had agitated considerably; that is, anaphylactic reaction or allergy. I had considered that thoroughly in this case from every possible standpoint, and it may be that this man had there the severe toxic reaction from the Vincent's infection. As I understand Vincent's infection, it is in symbiosis usually with Streptococcus; and the Streptococcus in this case, although we could find nothing to justify it, may have been the cause of the violence of the symptoms.

As to how the infection may have reached the eyes in this case, there are a great many theories. Billings holds that it may be by the lym-

phatics or the osseous channels or by the infiltration and engorgement of the internal vessels, which cause blockage of the vessels and pouring out of the fluid into the tissues. Yet that does not explain the severe ecchymosis of the conjunctiva.

It is true that eosinophilia may be found in anything, particularly in post-febrile conditions, and especially in mastoid conditions, where there is a true necrosis of bony tissue, although this may be overclouded by a septicemia in the same case or a bilateral thrombosis.

I happen to have seen the case through a dentist whose office is very near mine, this case being a patient of this dentist. He just asked me, as a matter of interest, knowing that I had had a case similar to it, if I would look at the case. I did, and he took smears. I believe in this case the fusiform predominated instead of the spirochete. You know if the spirochete predominates the prognosis is much more grave. The man was running an eosinophilia of around 18 per cent. The blood was gotten from these two tooth pockets. The eosinophilia may not have been local but due to the blood in the smear.

One gentleman asked me whether this reaction is specific to Vincent's infection or the result of other infections. I can not answer that question. We do know that the marked edema and ecchymosis of the lids come about in other infections of the upper respiratory tract, nose, sinuses, throat, face, anything in those parts. It is frequently just as severe in any systemic infection, such as septicemia. I do not feel that the symptoms in this case were particularly pathognomonic of Vincent's angina; but it just happened that there was not anything else in this man I could determine, after study over a long period of months, except Vincent's angina—except for one thing, that the infection was augmented after the extraction of one molar.

I have had no experience in treatment in these cases. I understand that Bloodgood recommends treatment with perborate of soda. I understand that ——————, in the Army, recommends for ordinary prophylactic treatment and in convalescence brushing the teeth with (soap?). In my study of this subject I found that almost everything in the category of medicine is recommended as treatment, but I do not know of any specific treatment.

TUMORS OF THE PITUITARY AREA

Dr. J. S. Norman, Hickory

In discussing this subject I will confine my paper to the general symptoms of these neoplasms that show the usual ocular signs.

The majority have their origin in the sella region between the anterior and posterior clinoid processes and may involve the chiasm.

From the usual indefinite symptoms or signs in their beginning they are many times overlooked on account of their usual slow progressive growth.

From the fact that the eye symptoms show late in some cases often throws us off our guard and we do not make an earlier diagnosis.

Hirsch of Vienna states that pituitary tumors are almost as frequent as goiters and that the large majority go unrecognized because of lack of knowledge of the symptoms.

The pituitary body lies within the sella turcica of the sphenoid bone. The optic chiasma does not lie in the sulcus chiasma as is usually described and is separated from it by the cisterna chiasma, a space filled up by cerebro spinal fluid. The back of the sella turcica is inclined forward in the X-ray. If the X-ray shows it straight up you are probably dealing with a pathological picture.

The most common tumors of the hypophysis are the adenomas and cysts which are supposed to develop from embryologic tissue, remaining of the hypophyseal duct.

The clinical picture varies with the exact location of the tumor; although nearly all show the usual signs of hypopituitarism more or less. However, this may be delayed.

Headache, nausea and vomiting may or may not be present. Visual disturbances are the commonest findings in every case; usually a slow progressive loss of vision with bitemporal or homonymous hemianopsia. The presence of primary optic atrophy or of papilledema depends on the location of the tumor, according to such an authority as Peet.

The changes in the fundus vary with the location of the primary growth. If, according to the previous authority, it develops at the angle of the infundibulum and the anterior pituitary lobe, or beneath the capsule of the latter, the tumor lies below and usually in front of the optic chiasma.

Growth of the tumor, therefore, will press on the under surface of the optic nerve and chiasm, producing defects in the upper quadrant of the visual field. If the growth is most pronounced in the mid-portion bitemporal hemianopsia results. Not infrequently, however, the growth tends to pass more to the left, producing left or right homonymous hemianopsia or blindness in one eye and a temporal hemianopsia in the other; depending upon whether the pressure was greatest on the optic nerve behind or in front of the chiasm and on the degree of pressure on the latter.

Primary optic atrophy is the rule in the suprasellar subchiasmal lesions.

Hirsch states he found bitemporal hemianopsia in the greatest majority of his cases. In a few cases he got homonymous hemianopsia, i.e., temporal in one eye and nasal in the other.

In these cases the chiasma does not lie in the middle line; but to the side and therefore the tumor presses against one tract which would give homonymous hemianopsia.

Therefore you may have an eye completely normal and loss of vision of the nasal field in the other. This may last several years before the next stage develops. Hirsch claims he never saw a bi-nasal hemianopsia namely—where both nasal fields were lost.

At times you get a central scotomata in one eye and the other may be normal. This is important in making a differential diagnosis; as we get a central scotomata in retrobulbar neuritis and multiple sclerosis. If hemianopsia for colors shows in the examination we may consider pituitary disturbances. We may find the field concentrically diminished in one or both eyes as in a papilledema. However, papilledema

may occur in pituitary tumors. Hirsch states again that the majority of cases of pituitary tumor show primary optic atrophy.

Enlargement of the sella space is shown by X-ray and is another most important sign in making a diagnosis. As the pituitary body may normally vary in size, so will a variation in the size of the sella be shown accordingly. Should the enlargement of the sella exceed reasonable anatomical limits, then it is an important sign; and if the tumor invades the sphenoid sinus as sometimes happens, we then have our symptoms of sphenoid disease included. While enlargement of the sella is an important symptom of pituitary tumor, as shown by X-ray, we must consider tumors of the parietal lobe, optic thalmus and hydrocephalus; and this is borne out in making a differential diagnosis with the other symptoms mentioned.

As you all know, hemianopsia is divided into homonymous, which shows half vision of nasal side in one eye and half vision in temporal side of other eye.

Bitemporal hemianopsia, which shows half vision of temporal side in each eye.

Binasal hemianopsia, which shows half vision of nasal side of each eye. Uncommon.

Horizontal hemianopsia, which shows half vision of upper half of each eye.

I wish to report the following case: Patient, female, age 46, married, mother of several children, no miscarriages. General condition of health good, mental condition poor, was a patient in State Hospital. In discussing this case, my attention was called to this patient on account of apparent blindness.

At the time of the examination, patient could not see pencil or light in front of right eye. She could see the pencil and light at nasal side of right eye. Could not see pencil or light at temporal side of either eye. This examination applies to both eyes.

Opthalmoscopic examination. I found that the nasal side of both nerve heads were of an egg shell white color and the vessels marked indistinct. Pupils moderately dilated; the perception of light was somewhat lessened from the temporal angle; patient unable to read any form of type at all. Fortunately she was in a moderately rational state of mind and was able to give a fairly good history of her case. She stated she had been getting blind for two years, so that in the evening she could not see well enough to read or sew.

I advised an X-ray of the sella region and we found upon examination of the plate a rounded mass with a somewhat distinct outline, lying to the front region of the sella.

About six months after this time, saw this patient again; she was completely blind; there was no perception of light and the pupils were almost completely dilated.

Another X-ray was made and the growth had become very much enlarged to about the size of a goose egg, projecting backward over the sella region with a distinctive shell-like or capsule outline. This picture has been lost, I regret to state, as it showed the progression and size of the tumor.

Shortly after this time she died from a diagnosis of brain tumor with terminal symptoms of glosso-labio laryngeal paralysis, etc. I did not have the opportunity to observe her after the second X-ray, and regret the loss of not being able to give a more complete clinical line of symptoms.

This case was not operated on as perhaps may be suggested and I therefore offer this explanation. As this case was under state care and in charge of a most competent staff of physicians and everything possible was done for her welfare. Had she had an examination at an earlier period, the diagnosis might have been made. Operations in these cases are not at all promising, some records show good results. However, at this time we are glad to report a greater success in surgery of these growths. Many authorities are giving us a variety of results of operation in this field. The majority, however, come to you too late.

I was unable to make a complete examination as to fields and other data which I am sure would have been most interesting from the unusual picture and location of beginning growth.

The tension in the eyes was not unusual or increased; the discs were not cupped; the lens and vitreous were clear; no diseases of the iris present; no diseases of the cornea and no conjunctivitis or diseases of the lids.

I was unable to make an examination of the sinuses, but my best recollection is that there was no sinus disease.

1. There was no Wassermann made.
2. There was no post-mortem made.

DIAGNOSIS

1. Impression. Bitemporal hemianopsia.

Pre-chiasmal tumor with beginning pressure or growth affecting, first the anterior fibers or internal retinal fibers of chiasm destroyed either by pressure of growth, terminating in complete atrophy as growth destroyed area of both sides and decussation of chiasmae fibers.

SECTION ON GYNECOLOGY AND OBSTETRICS

Dr. R. A. Ross, *Chairman,* Durham

WEDNESDAY AFTERNOON SESSION—APRIL 30, 1930

The Section on Gynecology and Obstetrics of the Medical Society of the State of North Carolina was called to order at two-twenty o'clock at the Carolina Hotel, Pinehurst, N. C., by the Chairman, Dr. R. A. Ross, of Durham.

Chairman Ross: Will the Section please come to order? At this time I will appoint two committees, one to report on the best paper offered by this Section, which is to be submitted in competition for the Moore County award. I should like to appoint on that committee Dr. J. S. Brewer from Roseboro, Dr. G. L. Cheatham from Raleigh, and Dr. R. L. Ferguson from Charlotte.

Also a Nominating Committee for the Chairman of this Section next year: Dr. N. O. Spikes from Durham, Dr. D. B. Cobb from Goldsboro, and Dr. T. D. Sparrow from Charlotte. Will they consider the matter and make a recommendation at the end of the session?

I think most of us are anxious to get things started, so if Dr. Watkins is ready, we would be very glad to have him begin at this time. His subject is "Roentgen Pelvimetry." Dr. John Watkins of Asheville!

ROENTGEN PELVIMETRY

John A. Watkins, M.D., Asheville, N. C.

It is obvious that one of the essentials of good obstetrics is to forecast the character of a labor and to predetermine the method of delivery. It is also highly desirable to foresee a difficulty and to anticipate and meet an abnormality.

The bases of such prognostication is dependent upon many and varied factors. Among these are the general physical conditions of the patient, particularly the functional state of the vital organs such as the heart, the kidneys, and the lungs; the mental state and the nervous stability of the woman; her parity; the resistance offered by the soft tissues, etc.

But the more important factors governing the character of a delivery have to do with the passage; the passenger, and the expulsive force. Of the latter the duration; the interval, and the power exerted by the expulsive force, (pains), are most important, while with the passenger we have to deal with its size, its moldibility and the presentation. In the passage we have, however, the most important factors affecting a delivery. This is for several reasons. In the first place the size, the symmetry and the inclination of pelves are subject to greater variation than is either the character of the pains or the size, moldibility or

presentation of the passenger. In addition pelvic abnormalities are beyond our power of correction. The expulsive force in general is rather constant and characteristic of each stage, and to a large extent it is within our control to increase or to decrease or to alter the character of the pains. As to the passenger the size of full term infants is rather uniform, variations in cranial measurements of children born by section at term being not great and even after delivery from below show rather constant measurements. Moreover ability to mold is rather constant and about 95 per cent of the presentation is cephalic.

Of all the factors therefore, influencing the character of delivery the pelvis is the most important. An accurate knowledge of the size and symmetry of the pelvis is essential to good obstetrics and is one of the distinguishing marks between mid-wifery and obstetrics. Pelvimetry was in the past wholly limited to external mensuration (and is as a matter of fact today almost wholly relied upon by a great majority of physicians), but those of experience know the unreliability of the information of the passage that is obtained by external measurements.

De Lee states, "Of late years there has been a tendency to neglect pelvic mensuration. Most physicians are not skilled in taking the internal dimensions and the external ones are unreliable indices of the size of the pelvis cavity. Further, the practitioners have got to rely on a test of labor—letting the patient have pains a certain length of time, and if the head fails to descend, they perform a Cæsarean section. This is a blundering method of procedure, and is both unscientific and costly in human life. We should always strive to acquire as exact knowledge as possible of the size and shape of the parturient passages."

"Baudelocque believed that, by deducting 8 cm. from the external conjugate, the length of the vera could be obtained. This is not true, because the thickness of the bones and their conformation, produce differences of even 5½ cm. (Skutsch and Goenner). The author possesses a pelvis with an external conjugate of 18 cm. and a C. V. of 14 cm., and another with an external conjugate of 21 cm. and a C. V. of 9½ cm. (*********)"

"For the same reason the other measurements are unreliable. The author has a pelvis with an intercristous diameter of 21 cm. and an internal transverse of 13½ cm. The relation between the interspinous and intercristuos diameters is of more importance, for when the interspinous diameter is equal to, or greater than, the intercristous, we suspect a flat pelvis. (See Chap. LIV.) The author insists on internal pelvimetry in all cases, excepting only who have had one or more large children without the slightest difficulty."

The only internal measurement that can be taken with much accuracy by most physicians is that one first described two centuries ago, i.e. the diagonal conjugate, from which the true conjugate is estimated. Yet it becomes more obvious as clinical experience is coördinated with accurate pelvimetry that adequate transverse diameter which is a measurement seldom taken, or even discussed, is of as much importance as is ample anteroposterior space. Moreover, in our own experience it appears that the oblique diameters also are of much more importance than has been previously attributed to them, so much so that a certain ab-

normality of labor (delayed rotation) can apparently be predicted with accuracy when this space is shortened. The internal measurements therefore, are the only ones of value, yet the experience and ability to do internal pelvimetry with any degree of accuracy is possessed by but few of the many upon whom the responsibility rests.

In studying a pelvis we have three sets of data to collect and coördinate viz.: those of the inlet; the excavation, and those of the outlet.

Of these accurate information of the inlet is not only most difficult to obtain but is also the most important. The available space in the excavation can be rather reliably estimated by palpation particularly when coördinated with accurate measurements of the inlet. The outlet can be directly observed and both the Bis-Ischial and Pubo Sacral diameters measured.

It is obvious therefore, that if good obstetrics is to be more generally practiced a greater and more accurate knowledge of the exact size and symmetry of the passage must be had. And it is also obvious that some more simple, and more practicable method than the usual internal mensuration, and some more reliable method than that of external pelvimetry be made available to the practitioner if this knowledge is to be more generally acquired and these data more universally applied in the practice of obstetrics.

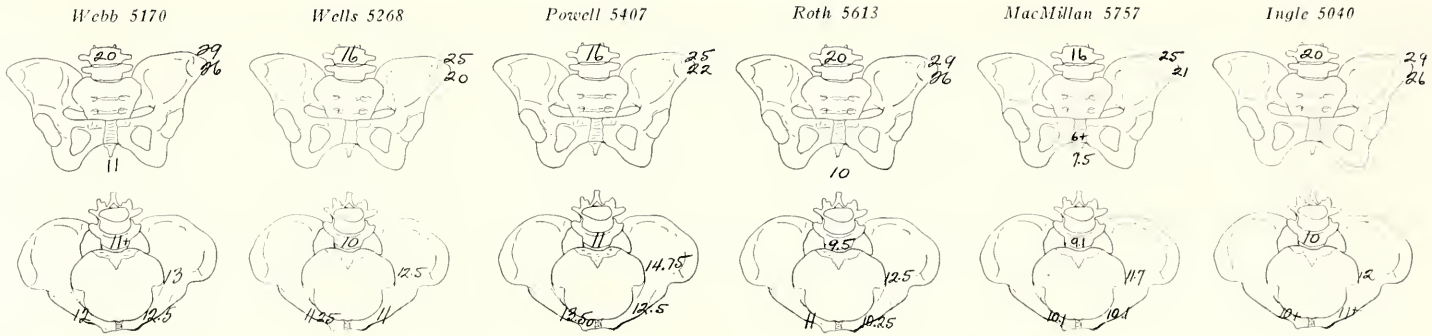
It is this subject I desire to discuss with you today and I wish to call your attention to the photometric method of studying the inlet of the pelvis. This is not new. One of the first thoughts as to the use of the roentgen ray was its possible use in the study of the female pelvis. So far as I know, however, very little use has been made of this method and there is very little data appearing in either periodical literature of the standard works dealing with obstetrics.

Thoms in 1922 and in other papers (2) (3) (4) (5) has dealt with the subject and in 1927 (6) described a simplified technique which, with some modifications, is briefly described below.

TECHNIQUE

Two points on the body of the patient are identified, viz., the space between the fourth and fifth lumbar vertebrae posteriorly and the upper and interior border of the symphysis pubis. An imaginary line between these two points traverse the antero-posterior diameter of the inlet.

The patient is so placed on the table that the plane of the superior strait is parallel with the X-ray plate. The distance from this plane to the plate is accurately measured and recorded. An exposure is then made and when developed the image of the inlet can be measured.. This measuring is done with the scale previously prepared on a film by the image of a lead bar marked off in centimeters, photographed at various distances from the film. The difference in the size of the image of the inlet on the plate from its true size and the difference in the size of the image of the centimeter on the film from a true centimeter will be the same because the divergence is, in both instances, the same. If the distance of the superior strait from the film is, say 15 centimeters, its photograph is measured by the lead bar scale image photographed at 15 centimeters.



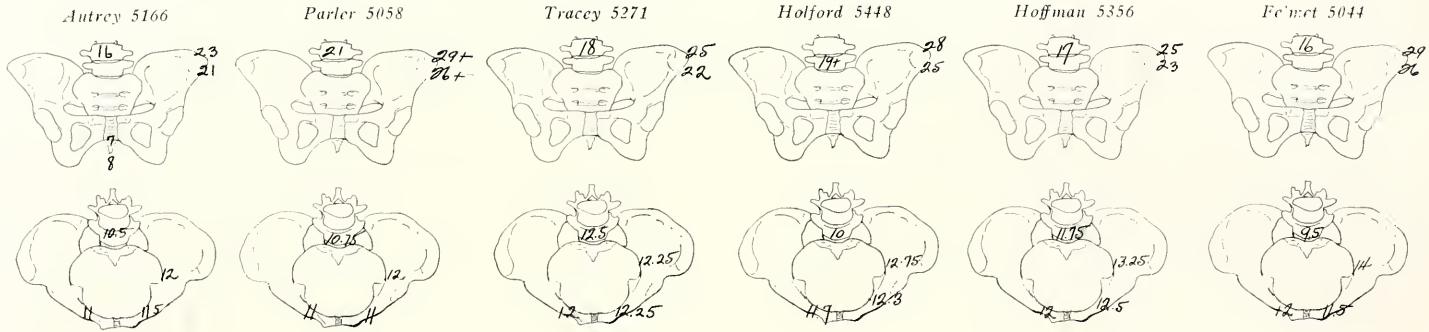
WELLS—The external measurements of this pelvis and the X-ray measurements of the passage shows a uniformly slightly contracted condition and is of no particular interest except that it brings out the contention that an easier labor may be expected in a symmetrical pelvis even though somewhat contracted, than in an asymmetrical pelvis of larger dimensions. This woman successfully delivered, without interference, three full term children of average weight.

POWELL—The external measurements of this patient are small, in fact, so small, as to lead one obstetrician into the belief that he was dealing with a markedly generally contracted pelvis. She was sectioned twice, by election, the second time her tubes being tied off, yet, as is shown by photometric methods she possesses a pelvis at least somewhat larger than the normal.

ROTH—The external measurements of this patient are exactly normal. The measurement by this method shows, however, a generally contracted inlet, a true conjugate measuring only 9 1/2 centimeters. The left oblique is over two centimeters short. She was Para-I; there was no lightening nor engagement of the head and she delivered without interference only after 14 hours good labor, a child weighing 4 lbs. 9 oz.

MacMILLAN—This is uniformly contracted pelvis as shown by both external and internal measurements. A Cesarean section was chosen by the obstetrician and elected by the patient.

INGLE—The external measurements of this patient are exactly normal. She comes with a history of arrested labor in two instances with the loss of both children in attempted forceps delivery in the home. The husband states that he viewed both children after delivery and that the face and back of the head were mutilated. Measurements of the inlet show both conjugate and transverse somewhat contracted (but with normal limits). However, twice that amount of shortening is noted in the oblique diameters. This would lead us to expect slow rotation, or transverse arrest as would the history of the delivery; this was confirmed at a third delivery when an uninjured child was delivered after a labor in which delayed rotation had impeded progress to such an extent as to necessitate interference.



AUTREY—This pelvis is but slightly below the usual measurements but with asymmetry. The external measurements, however, would indicate marked contraction (being 23 x 21 x 30 x 16) with symmetry, however.

PARLER—This patient's external measurements are somewhat above the average, yet the internal measurements are somewhat shortened, particularly the oblique. It is interesting to know that this labor was characterized by occipital posterial position which necessitated forceps, rotation and extraction.

TRACEY—A photograph of this inlet shows it to be a passage of larger dimension than normal excepting the transverse, the true conjugate measurement is 12 1/2 centimeter the longest conjugate yet observed, yet her external measurements all average 2 1/2 centimeters short. One would think therefore, if he relied upon the external measurement, that he would be dealing with a moderately generally contracted pelvis, while as a matter of fact he is dealing with a pelvis of not only unusually ample dimensions but one of a very unusual type, a slightly contracted laterally. This woman in labor experienced a very obstinate deep transverse arrest.

HOLFORD—This patient comes with a history of a 72 hour labor terminated by forceps extraction with some injury to the child and extensive maternal morbidity. Her external measurements are within normal limits. Excavation by palpation seems ample; the Bi-ischial and Pubo sacrial are normal. Further examination reveals that the patient walks with a limp which she is unaware of herself and the date of origin of which she has no knowledge. The photograph shows the departure from normal, the left oblique being markedly shortened. She is not yet term and the mechanism of this labor will be watched with interest.

HOFFMAN—The external measurements of this pelvis are small and after six hours labor, in which unsatisfactory progress was made according to the observation of her attending obstetrician, a Cesarean section was performed. The photo of the inlet, however, shows it to be of normal dimensions. In her second pregnancy on the basis of these dates we allowed her to go into and proceed through labor, which was in all respects normal.

FELMET—This patient's external measurements were exactly normal, with the exception of the external conjugate which measured only 16 centimeters. The true measurements confirmed the external conjugate measurement shortening in this instance (being only 9 1/2 centimeters), but the transverse measurement shows the inaccuracy of the external measurement, the later being normal while the actual distance is a full centimeter larger than the normal. This is a flat pelvis.

PRESENTATION OF FILMS

We will only have time to show a few films. So those have been chosen which will illustrate the following points:

1. A pelvis with normal external measurements may have normal internal measurements.
2. A pelvis with normal external measurements may have abnormal internal measurements, these being either longer than the average; shorter than the average or asymmetrical, the conjugate, of the oblique, or the transverse not bearing their usual size relationship.
3. A pelvis with small external measurements may have a passage not only ample in size but above the average.

In other words the relationship between the external measurements and the true (internal measurements) is not constant and can not be relied upon with accuracy.

While the number of cases studied by this method is too small from which to draw conclusions yet several observations, which have been repeatedly made, are of interest to note at this time and perhaps would be of value in future study. These are:

1. An easier labor can be expected in a symmetrical pelvis, though somewhat contracted, than in an asymmetrical pelvis of larger dimensions.
2. If the oblique is short, slow rotation or occipito-posterior position may be expected.
3. If the true conjugate is short, delayed engagement may be expected.
4. When the transverse is shortened slow descent may be expected or deep transverse arrest.

SUMMARY

1. Good pelvimetry is essential to good obstetrics as the size and symmetry of the pelvis is the greatest factor affecting the character of a labor and therefore of first importance in the correct handling of a case.
2. The internal measurements alone are accurate as the relationship of the external measurements and the true size of the passage is not constant. An inlet may be generally contracted at the conjugate, the oblique or transverse with normal or large external measurements; or these diameters may be ample, or even above the average, with small external measurements.
3. Accuracy in internal pelvic mensuration is difficult to obtain; sometimes painful and can be performed with reliability by but few of those upon whom the responsibility of delivery rests.
4. Some more simple and practicable method than internal pelvimetry and some more reliable method than external pelvimetry should be available.
5. Photometric study of the inlet combined with the other measurements is suggested.
6. Clinical histories of delivery accompanied by photographs of the inlet illustrating the subject matter are given.

DISCUSSION

CHAIRMAN ROSS: Dr. Watkins' very interesting paper is now open for discussion. The leader of the discussion, we regret, is very sick in Asheville—Dr. J. D. McRae. We will be glad to hear from any member of the Society. If you want to ask Dr. Watkins any questions, I am sure he would be glad to answer them.

DR. N. O. SPIKES (Durham): In reporting the case in which you had normal delivery after she had a section, I should like to ask if she has had any children since, and if she had normal delivery.

DR. WATKINS: She is pregnant now.

DR. SPIKES: I should also like to ask you if you knew whether or not the measurements of the baby and the weight were the same for both deliveries.

DR. W. O. MOORE (Charlotte): I came in late on this rather interesting paper. I didn't find out if the essayist gave his technique in taking the pictures. If he did, I was going to ask for the benefit of myself and latecomers if he would repeat that in his conclusion.

DR. WATKINS: Answering Dr. Spikes' question, I do not recall, of course, the exact size and weight of the children, but I do remember very distinctly having the mother and other members of the family remark that the second child was larger than the first. In other words, she delivered normally a larger child than she was sectioned for.

I did not mention the technique Dr. Moore asked about, but I thought Dr. McRae would be here to explain it. As he is not here, I will explain it.

The patient is placed in a semi-reclining position like in a morris chair. The location of the junction of the fourth and fifth lumbar posterially, the upper inner surface of the symphysis anterially having previously been marked, she is then tilted back and forth on a table in a semi-reclining position until those two are horizontal, the plane of the superior strait passing through those two points. The distance from the fourth and fifth lumbar to the film is measured, and it is recorded. The photograph is then taken.

We have previously photographed a lead bar marked off in centimeters at varying distances from the plate—8, 10, 12, 13, 14 and up. The picture is then taken. We will assume that inlet would take 14 centimeters above the film. We would then use this film which we have previously photographed and place it directly over this to measure it.

In other words, a centimeter at that inlet is a true centimeter as a centimeter on this lead bar at that distance is to a true centimeter. The divergence is identical in each instance. If that were taken at 15 centimeters you would use this scale. In that way we can take our inlet and immediately determine the exact measurement by superimposing in that way.

CHAIRMAN ROSS: The next paper on the program is "Descensus Uteri," by Dr. Thomas Sparrow of Charlotte.

DESCENSUS UTERI

Thos. D. Sparrow, M.D., Charlotte

In describing malpositions of the uterus, Graves (1) makes the following statement: "The nomenclature of uterine displacements has not been standardized. The following terminology and definitions, though not in all particulars universally employed, have received the sanction of good usage.

"Retroposition . . . may include retroversion, retroflexion and retrocession.

"Prolapse of the uterus denotes a permanent descent of the uterus from its physiologic level in the direction of the vaginal introitus.

"Procidentia denotes extreme prolapse and includes all conditions in which the cervix extrudes from the vaginal introitus.

"Complete procidentia is used to designate the extrusion of the entire organ from the vaginal orifice."

Although descensus is used commonly as a synonym for prolapsus, with your permission, I shall give it a broader meaning and define it as, the whole process of herniation of the uterus, beginning with its abnormal position in the pelvis and ending with its entire extrusion from the vagina. In other words, the stages of descensus uteri are: retroposition, prolapse, procidentia, complete procidentia.

It is obvious that, in order to include such a large subject within the bounds of one short essay, some statements may appear dogmatic. If such is the case I crave your indulgence, for descensus uteri has been the battleground for conflicting theories and opinions for a generation and our present state of knowledge of the subject does not warrant dogmatism. However, with such a mass of procedures at our disposal, we must come to some very definite and clear cut convictions on the subject.

The uterus is maintained in its normal position of slight antiflexion due to well known anatomical and physiological conditions. Piersol (2) states that its upper segment is normally one of the most freely movable viscera in the body. Its lower segment is much more firmly attached. It is supported by three pairs of false ligaments and four pairs of true ligaments. The false ligaments, the vesico-uterine, the broad, and the recto-uterine, are peritoneal folds and play a minor part in the support of the uterus and afford little material for surgical utilization. The true ligaments, the round, the utero-sacral, the utero-pelvic and the utero-ovarian, contain muscle and fibrous tissue and are the real anatomical supports of the uterus and any surgical attempts at repair of a displacement must be directed against these true ligaments. A relaxation of these ligaments must take place before a descensus can occur.

Intra-abdominal pressure is normally exerted against the posterior surface of the uterus and is an important physiological support of its anterior position. When the uterus is in retro-position, the intra-abdominal pressure ceases to act in a supportive way and is applied to the anterior surface of the uterus. This tends to exaggerate and maintain the displacement and to aid in the process of descensus.

The fascial planes and (2) "the integrity of the levator ani muscle,

insuring a well closed vaginal outlet" are the most important factors in supporting the uterus within the pelvis.

The conclusions which may be drawn from this anatomical résumé are:

1. The ligaments of the uterus, intra-abdominal pressure and the integrity of the pelvic floor are the factors which maintain the uterus in its normal position within the pelvis.
2. In order to retrocess (Graves) or retro-displace, there must be relaxation of some of the true ligaments, principally the round.
3. It is probable that a uterus, in its normal position of slight anti-flexion, cannot prolapse. When retro-displacement or retro-cession occurs, the uterine axis becomes parallel to the axis of the vagina and is therefore in a position to prolapse.

In other words, the essential conditions for prolapsus obtain when a uterus, in a state of subinvolution from any cause, is retro-displaced and the perineal floor is relaxed or lacerated.

Graves states that, after the menopause, the uterus is always in the second degree of retroversion if the physiological process of atrophy takes place normally. . . . It is important to remember, therefore, that retroversion of the senile uterus is physiologic and not pathologic.

Stacey (3) reported 20.2% of uncomplicated retroversion in one thousand unmarried women examined at the Mayo clinic. Mason (4) adds that "such cases must be looked on as congenital and any attempt to change the position of the uterus in such cases causes discomfort and that little, if any, protection will be afforded against a later prolapse. Such cases are often associated with an infantile type of uterus."

There is a group of cases, however, in which retro-displacement does give definite symptoms and suspensions, properly done, do give relief. To refuse or to fail to operate on these cases is no more justifiable than to refuse or fail to operate on an inguinal hernia until it is complete.

The symptoms these cases usually present are:

1. Backache, always lower lumbar or sacral in type and always in the midline.
2. Some menstrual abnormality, usually dysmenorrhea.
3. A "bearing down" sensation in the lower abdomen, a feeling of non-support.
4. A retro-displaced uterus which is usually large and boggy.
5. The absence of pathology in the pelvic bones.
6. Frequently a relaxed or lacerated perineum.

The history of recurring miscarriages or abortions, with negative blood and spinal findings, frequently occurs. Such cases have usually had one or two normal deliveries and then abort with the second or third pregnancy. It is logical to infer that relaxation of the uterine ligaments, perineal lacerations, and sub-involution resulted from the first pregnancies and deliveries.

When such patients are operated, the uterus is frequently found enlarged, congested and mottled and the uterine veins tortuous and varicosed. Such findings at once justify the surgeons judgment in operating. Anatomists (Deaver (5) tell us that the uterine artery is normally tortuous but the uterine vein is straight. When any vein that is

normally straight, becomes tortuous and varicosed it is pathologic and it returns the blood to the larger trunks sluggishly, leaving its area of drainage congested and often edematous. So it is with the inferior hemorrhoidal, so it is with the saphenous and so it is with the uterines.

The surgery of such cases cannot be discussed in detail, it is entirely too voluminous. (2) "The round ligaments act, chiefly, in tending to prevent retro-displacement," and are logically the support attacked in any number of well established and successful procedures. No operation is one hundred per cent successful and no operation is applicable to one hundred per cent of cases.

The Gilliam operation, as modified by Mayo, is so eminently successful, it is unhesitatingly presented as the procedure of choice. In brief, both recti muscles are exposed on opening the abdomen, a curved forcep is passed over the rectus, through the internal, inguinal ring, entering the abdomen between the layers of the broad ligament. The anterior layer of the broad ligament is punctured, the round ligament grasped about two inches from the uterus and withdrawn through the internal ring. If it is sufficiently long, it is then sewed to its fellow of the opposite side as Mayo suggested. If this creates too much tension, it may be sewed to the anterior layer of the rectus sheath on the same side, with two silk sutures.

This operation is chosen:

1. Because it effectually suspends the uterus.
2. It is an anatomical procedure.
3. There are no sutures passed into the uterus and in subsequent pregnancies the enlargement of the uterus is unembarrassed by the abnormal attachments of its supporting ligaments. The operation will withstand pregnancy.
4. It leaves no surface for adhesions and no loopholes for obstruction.

No suspension operation is complete unless accompanied by a perineal repair in cases where there is a relaxed or lacerated perineum.

There are cases in which the cervix appears at the introitus in which there is very little actual prolapse of the uterus. These cases are described by Clark (6) as pseudoprolapsus and are caused by an hypertrophically elongated cervix. There may be an accompanying cystocele or rectocele. A high amputation of the cervix, with repair of the perineum and uterine suspension, is the obvious treatment.

In order to obtain a comprehensive, statistical study of prolapse and procidentia, there was combined into one chart, the reports of Lynch (7); Gibson (8); Cron (9); Newell (10); Brady (11); Broad (12); Phaneuf (13); Clute (14); Baer & Reis (15); Bullard (16); Smith, Graves and Pemberton (17); Miller (18), and Clark (6). Such a composite study is both interesting and instructive. In these series there are reports on 2,154 operations for prolapsus; 1,645 of these cases were followed and rechecked for periods of time varying from 1 to 17 years. The age of the youngest was 15, the oldest 83. By far the most frequent age of operation was between 45 and 50, establishing definitely the fact that prolapsus is preëminently a condition to be handled about or after the menopause.

Author	Number of Cases	Number Followed	Percent Mortality	Operation	Percent Success	Percent Partial Success	Percent Failed	Most Frequent Age
Lynch	52	52	0	Vaginal hyster.	98	2	0.00	42
Gibson	89	45	1.1	Emmett Baldwin	94.5	0	5.5	..
Cron	225	183	1.	Watkins	90	4.8	3.8	54
Newell	100	100	0.	Mayo and Watkins	97	0.	3.	..
Brady	56	48	0.	Watkins	93	4.	2.	..
Broad	100	38	1	Watkins (55)	84.2	13.11	2.63	50
	...	...	....	Absom. combined	100	.....	....	..
	...	...	....	Mayo (15)	100	.....	....	..
	...	...	....	La Forte (2)	100	.....	....	..
Phaneuf	63	63	0	Watkins (58)	95.24	0	4.76	45
	...	...	....	Mayo (5)	100	.....	....	..
Clute	63	53	3.17	Watkins	56.6	33.96	377.	..
Baer and Reis	212	148	1.8	(For series)	85.9	6.1	8	45
	...	...	....	Watkins (91)	87.5	4.7	7.8	..
	...	...	....	Reis (28)	80	6.7	13.3	..
	...	...	....	Ventrofixation (27) etc. etc.	94.7	0	5.3	..
Bullard	361	324	0	Watkins (77)	63.6	32.4	3.8	40
	...	...	....	Bissell (12)	50	41.6	8.3	..
	...	...	....	Mayo (50)	76	18	6	..
	...	...	....	Vag. Plastic (81)	75.3	22.2	2.5	..
	...	...	....	Abdominal only (7)	57.1	14.3	28.6	..
	...	...	....	Emmett-Baldwin (4) etc.	100	.....	....	..
Smith,	683	466	2.28	Incom. Plas (15)	58.4	25	16.6	42
Graves and	...	...	....	Complete Plastic	44.4	22.2	33.3	..
Pemberton	...	...	....	Abdom. only (10)	71.6	14.2	14.2	..
	...	...	....	Incom. plas. and Lap.	63.1	31.1	5.8	..
	...	...	....	Com. Plas. and Lap. (338)	78.2	15.1	3.6	..
Miller	50	39	2	Watkins	93	7	....	50
Clark	100	86	0	Watkins, Hyster, Mayo's, etc.	83.4	14.3	2.3	..
Totals	2,154	1,645	1.2		80.96	12.70	6.34	45

Such a large series includes practically all established methods of operative procedure and gives at least an index to the results obtained.

For the whole series there was complete success in 80.96% of cases; partial success in 12.7% and failure in 6.34%.

The three most frequently used operative techniques reported in detail are the Watkins, the Emmett-Baldwin and the Mayo. A complete report cannot be made on any of the operations used because several of the authors quoted used two or more techniques and reported the results for the series as a whole. There are, however, a sufficient number of the reports, in which the separate operations can be studied in detail, to give some idea of their relative value.

From eight reports, the Watkins operation was performed 675 times; 445 of these operations were definitely followed; 82.83% were successful, 12.54% partially successful and 3.83% failures.

WATKINS INTERPOSITION OPERATION

Author	No. Cases Reported	No. Cases Followed	Percent Success	Percent Partial Success	Percent Failure
Cron	225	183	90	4.8	3.8
Brady	56	48	93	4	2
Broad	55	..	84.2	13.11	2.63
Phaneuf	58	58	95.24	.....	4.76
Clute	63	53	56.6	33.96	3.77
Baer and Reis	91	64	87.5	4.7	7.8
Bullard	77	..	63.6	32.4	3.8
Miller	50	39	93	7	....
Totals	675	445	82.83	12.54	3.83

EMMETT-BALDWIN OPERATION

Author	No. Cases Reported	No. Cases Followed	Percent Success	Percent Partial Success	Percent Failure
Gibson	89	45	94.5	....	5.5
Bullard	4	..	100	....	....
Totals	93	45	97.25	....	2.75

MAYO OPERATION

Author	No. Cases Reported	No. Cases Followed	Percent Success	Percent Partial Success	Percent Failure
Broad	15	..	100	..	..
Phaneuf	5	..	100	..	..
Baer and Reis	7	5	100	..	..
Bullard	50	..	76	18	6
Totals	77	5	94	4.5	1.5

The Emmett-Baldwin operation, as reported by two authors, was performed 93 times; 45 cases were followed; 97.25% were successful and 2.75% failed.

The Mayo operation, as reported by four authors, was performed 77 times; 5 cases were followed; 92 %were successful, 4.5% partially successful and 1.5% failed.

In this comparison with the other two procedures, the Watkin's interposition operation would seem to suffer. Due consideration of the greater number of cases reported, of the Watkin's technique and the greater number of surgeons involved, makes the comparison more apparent than real. For instance, two of the authors, Clute (14) and Bullard (16), are very strict in differentiating between the successful and partially successful cases, throwing into the latter class those cases with only very minor defects. The majority of the authors found the Watkins very successful. The percentage of success was above ninety-three in the series reported by Brady, Phaneuf and Miller.

A comparative study of the cases in which a vaginal plastic, alone, was done and those in which an abdominal only was done, shows little relative difference in the value of the two procedures and argues strongly

VAGINAL PLASTIC ALONE

Author	No. Cases Reported	Percent Success	Percent Partial Success	Percent Failure
Bullard	81	75.3	22.2	2.5
Smith, Graves and Pemberton	13	44.4	22.2	33.3
Baer and Reis	11	45	36	19
Totals	105	54.9	26.8	18.3

ABDOMINAL OPERATION ALONE

Author	No. Cases Reported	Percent Success	Percent Partial Success	Percent Failure
Bullard	7	57.1	14.3	28.6
Smith, Graves and Pemberton	10	71.6	14.2	14.2
Totals	17	64.35	14.25	21.4

for a combination of the two as the per cent, for each done separately, is far below that for the whole series.* Three authors report 105 cases in which the vaginal plastice alone was done with 54.9% successful, 26.8% partially successful and 18.3% failure. Two authors report 17 cases in which some form of abdominal operation was performed without a plastic. Of these, 64.35% were successful, 14,25% partially successful and 21.4% failures.

The most frequent symptoms, of which the patients complained, based on a study of 1,195 cases in which the reports are made by three authors, are as follows:

Presence of a mass	882
Frequency and incontinence	396
Backache	201
Pain in abdomen	74
Dysuria	67
Leukorrhea	46
Menorrhagia and Metrorrhagia	35
Pain on urination	32

Five authors reported on 371 operations in which there were no operative deaths. There were 27 deaths reported in the series or a mortality of 1.2%. In 16 cases the cause of death was not given. In 11 cases the causes were divided as follows: cerebral embolism 2; hemorrhage and shock 3; infection 1; pulmonary embolism 1; peritonitis 1; cardiac dilatation and shock 1; pneumonia 2.

The most frequent cause of complete failure were return of descensus or marked rectocele or cystocele.

Urinary symptoms, varying from frequency of urination to incontinence, and minor grades of cystocele and rectocele, are the most frequent cause of partial success.

The indication for the Watkins interposition operation are usually given as a patient at or about the menopause in whom the uterus is not too large to accommodate itself to the position below the bladder. Halstead (19) found that the pressure of a large uterus on the trigone distorted the ureteral openings and actually encroached on the internal sphincter in such a way as to hold the urethra open. Clute (14) suggests that a complete preoperative cystoscopic examination is often enlightening and will explain some of the postoperative urinary symptoms. Cron (9), in referring to the failures in his series, states that "two of the uteri were atrophic and, therefore, too small to act as an efficient tamponade" and Phaneuf (13) attributes his three failures to atrophic uteri. He says "the cases suitable for the transposition operation are those where the uterus was normal in size or hypertrophied. Our experience has borne out Watkin's (20) statement 'a uterus transposed, that is too large, never gives trouble afterwards because of remaining large. It always atrophies'."

*A supra-vaginal hysterectomy, alone, is futile. Unless the cervical stump is well supported and there is a most careful repair of the anterior and posterior vaginal walls, there will be a prolapsus of the cervix; a condition causing the same degree of discomfort and inconvenience that was experienced before the operation.

Cullum (21) speaks of "the uterus the keystone in the vaginal vault" and, as such, it is logical to leave it as "a living pessary." (Broad 12) in cases where the Watkins operation can be done.

McGluin (22), in discussing the various steps in the development of the modern technique for operations on descensus, summarizes with the statement that "out of all this flux has come one operation which, when done, in properly selected cases, guarantees almost 100% of cures, the perfected interposition operation of Watkins."

In spite of the fact that the literature is full of almost all conceivable methods for treating this condition, newer methods and newer techniques are constantly being presented. It is right that it should be.

Crossen (23) advises shortening of the broad ligaments and elevation and repair of the utero-pubic fascia for uncomplicated prolapse.

Homans (24) reports success after closing the pouch of Douglas very much after the manner of Moschowitz.

Crile (25) presents a hangar method in which a wedge of the uterus is removed and a strip of abdominal fascia is sewed between the cut surfaces suspending the uterus from the abdominal fascia.

Hertzler (26) splits the uterus in the opposite direction from Crile and encloses one strip of abdominal fascia within the cut surface and sews another strip over the uterus.

In the series of cases, there were two cases in which cancer of the cervix were noted.

McLeod (27) reports a case of carcinoma of the prolapsed cervix and a second case of carcinoma of the cervix in which the uterus had been suspended (ventral for prolapsus).

McGlinn (22) found carcinoma of the fundus in a case following the interposition operation but concludes that the operation does not play any part in the development of cancer and the fact that it may occur, in no way condemns the operation.

Corvese (28) reported a similar case and carefully reviewed the figures from many large clinics on the incidence of cancer of the fundus of the uterus. He found the consensus of opinion to be that, where cancer of the fundus did develop, it was not because the Watkins operation had been done but in spite of it and he concludes that its occasional occurrence can certainly not be regarded as a contra-indication for the employment of a procedure which is of the greatest value in the hands of a competent gynecologist who knows how to select his cases.

SUMMARY

Descensus is used to describe the whole process of herniation of the uterus beginning with its abnormal position in the pelvis and ending with its complete extrusion from the vagina.

Retro-position is the first stage of descensus uteri. There are well chosen cases in which an operation is justifiable and the Mayo modification of the Gilliam is presented as an eminently satisfactory operation.

The most frequent time at which the surgeon is called on to treat cases of prolapse and procidentia is at the time of, or after, the menopause.

Any number of procedures are at the disposal of the surgeon for the treatment of prolapsus, any one of which should give above 90% success.

The most frequently used operation is the Watkins interposition and its percentage of success is sufficiently great, in the hands of a large number of surgeons, to warrant its acceptance as the procedure of choice in select cases.

With any procedure, a complete anterior and posterior colforraphy is necessary.

The occurrence of carcinoma in cases of prolapsus and procidentia is so unusual, it in no way contra-indicates the selection of the Watkins interposition operation.

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DISCUSSION

Dr. Dave Tayloe, Jr. (Washington): I am sure we all enjoyed the very thorough essay on Descensus Uteri. Dr. Sparrow has covered the subject in most minute detail, leaving very little to be said.

Descensus Uteri like any hernia has for its correction a number of operative procedures. The type of operation to be employed will naturally depend on several important factors such as the age of the patient and the possibility of future pregnancies, the condition of the uterus, the degree of descensus. As Dr. Sparrow has mentioned, no one operation is applicable in any hundred cases, but instead it is quite frequently necessary to use a combination of several different operations.

In the first stage of descensus uteri, namely retroposition of the uterus, this condition usually occurs in the young, child-bearing woman. For the past several years we have used a modification of the operation which consists of reduplication of the round ligaments down on the anterior surfaces of the uterus, and this reinforced by plication of the broad ligament to cover any raw surfaces.

In conjunction with this a shortening of the utero-sacral ligament posterially is done in practically all cases. I really believe it is an important step in most any suspension operation. This operative procedure leaves the uterus again suspended in the pelvis in its anterior

position. It does not convert it into an abdominal organ and leave it in the vertical position which is true with a great many suspension operations.

In procidentia uteri with the cervix appearing at the vaginal outlet, as Dr. Sparrow mentioned, the Watkins operation is the operation most generally employed and gives very satisfactory results, but in the complete procidentia with an extrusion of the uterus and bladder through the ostium vagina, occasionally we see it complicated by posterior culdesac hernia. This defect is quite a problem to correct, especially if you have a small, atrophic uterus where you cannot utilize the Watkins operation.

Occasionally it is necessary to do an abdominal hysterectomy with a fixation of the cervical stump to the abdominal wall. Dr. Sparrow says a colporrhaphy should be considered as part of the operation and should always be done in conjunction with any suspension operation. In this condition like all others, the best treatment is probably preventive treatment. I believe probably good obstetrics and more careful puerperal observation will do a great deal to minimize the number of cases. (Applause)

Dr. R. T. Ferguson (Charlotte): I don't believe Dr. Sparrow called attention to the use of pessaries. A great many cases of descensus uteri occur past middle life. A great many are complicated by sugar in the urine and high blood pressure. A great many are inoperable. I had a case recently that had a five-pound cystic tumor of the left ovary. It caused complete descensus of the uterus in a woman 70 years of age with a blood pressure of 210. This particular case was operated on under a local anesthesia with perfect result.

In a great many cases of high blood pressure and frequently sugar in the urine you have to do something besides operation. They are not suitable subjects for operation. In a case operated a few years ago by another surgeon, the uterus was suspended and some vaginal repair work done with cystocele, rectocele and peritoneal repair. The womb came outside again. She was a woman up in years, and the use of a balloon, rubber pessary has held her perfectly. It is absolutely comfortable. She came to my office wearing a sponge which is very uncomfortable and unsanitary. A great many of these cases get perfect results with a pessary. You have to pick it according to the patient and the laceration in the perineum. In the women with complications, and so many occur in women around 60 to 70 years, you have to do something else beside an operative procedure for relief. My experience with pessaries in this line of work has been more satisfactory than any other use to which we can put pessaries.

Dr. Charles I. Allen (Wadesboro). Dr. Sparrow has given us a very interesting résumé on the question of retroversion and prolapsus of the uterus, but there is one part of this question on which I have some very fixed ideas. I agree with him perfectly in what he said with regard to the prolapsus of the uterus, but when it comes to the question of retroversion of the uterus, when we find that 20 per cent of all unmarried women have a retroverted uterus and that more than 40 per cent of the women who have had one child have a retroversion of the uterus, I do not think we can consider it a pathological condition.

Personally, I am absolutely opposed to operating in any simple retroversion of the uterus. I may have gathered these ideas from the fact that I am located in a small town and I have to live with my surgery, see them every day, week in and week out. I have known by experience that you cannot cure backache and these other things that a lot of nervous women complain of by fixing up a retroverted uterus. As I have stated, I think it is a fairly normal condition in a large number of women.

I agree with what he says on the prolapsus of the uterus. These women have usually had several children and if a woman has not passed the menopause, I think you ought to do a sterilization operation at the time you operate. I don't believe you can fix up a woman with a complete prolapse of the uterus and do the work that will give her relief and have her go through a subsequent pregnancy without some of this work being undone. I have seen several women who have had complete prolapse operated on, and not sterilized, go into labor and come out with disastrous results.

I should like to ask Dr. Sparrow if he has any statistics to show how many women who have had simple retroversion, who have had them fixed up and have had a subsequent pregnancy, in how many the retroversion has gone back like it was to begin with.

Dr. Sparrow (closing) : I am glad Dr. Tayloe brought out the point of the small uterus where there is complete procidentia. In that case, I don't believe a Watkins is indicated. In some such procedure as he suggests, the supravaginal hysterectomy with half suspension of the cervix, or a vaginal hysterectomy very much after the lines of Mayo would probably be better procedure.

Dr. Allen has asked me for statistics on retroversion. I haven't any on the number that have occurred. I don't know where I could get any. I should like to find them. A great many suspended uteri probably do recur. I do not agree with him thoroughly. I think some do not, and I think some of them cause definite symptoms.

I think the big mistake is made in just assuming that a retroversion is an indication for operation. As he suggests, many nervous, high-strung women with backache have retroverted uterus in which suspension will not do them a particle of good, but contrary to his opinion, I think there are cases in which they get a good deal of relief from suspending the uterus.

I don't know about the figures on that.

Chairman Ross: The next paper on the program is "The Behavior of the Kidney During Pregnancy," by Dr. N. O. Spikes of Durham.

THE BEHAVIOR OF THE KIDNEY DURING PREGNANCY

Dr. N. O. Spikes, Durham

Some great obstetrician has said that pregnancy is a physiological condition, at all times very closely bordering on the pathological. This is true and its greatest example is found in the behavior of the kidney during pregnancy. It is very rare for a kidney to go through a full term gestation without showing something abnormal.

Barnes has said that "pregnancy is the test of bodily soundness"; and it is generally admitted that the kidneys are the point of weakest resistance during this period. The kidneys suffer in their effort to eliminate toxins from an abnormal ovum, or the accumulated excreta of the foetus, or the under-metabolized products and proteins insufficiently oxidized by the liver.

It has been a perilous task to carry the mother through pregnancy without losing her, and unquestionably great progress has been made in that direction. But, if one studies B. P. and kidney disease in women who have had children he must be impressed with kidney disease during pregnancy as a cause of permanent kidney disease, usually accompanied by some vascular disease, which is later on followed by heart disease, giving us that dreadful syndrome, cardio-vascular-renal disease, for which we have no cure.

Now the first problem is always prevention; second, if a kidney thing does develop, determine the type and the degree of the disease; and third, if possible determine whether or not if this woman is allowed to go full term, she will be left with an organic kidney disease, which will leave in its path organic vascular changes, leading to heart disease.

The most hopeful feature of this study is that the kidney has a most remarkable regenerative power, especially if the vascular system of the kidney has not been seriously damaged. All of us have seen cases of apparently severely diseased kidney, due to pregnancy, recover after removal of the cause and a normal pregnancy follow, provided a fairly long time elapses between gestations. Therefore, the most important deduction to be made from such a study is just when the kidney changes have gone to the extent that a permanent injury will result, if the pregnancy remains. This is indeed a most difficult problem. It is fairly certain that the kidney injuries without vascular damage are those which have the greatest opportunity to return to normal. Vascular damage is almost always indicated by a change in B. P., provided there is a good heart muscle. In the observation of kidney insufficiency during gestation and in prognosing these conditions, the B. P. readings share equal importance with the urinalysis and blood chemistry. Of all single diagnostic and prognostic indicators, the B. P. is the most important. In many instances the rise in B. P. is antecedent to and a warning to the kidney thing. We often see eclampsia with a normal urine and a normal blood chemistry, but we seldom see eclampsia with a normal B. P., almost certainly not a normal diastolic B. P.

Unfortunately, one cannot take a diseased kidney three months after delivery into the operating room and repair it as if it were an injured perineum. There are many things which contribute to the likelihood of the permanency of the damage, such as previous kidney disease, the post partum care, the associated cardio-vascular changes; but the two most important factors are first of all, the association of both general and local vascular changes and the duration of the disease.

Kidney disease during gestation varies greatly in its degree and also in its type. The disease may remain at the stage of hydrops and moderate albuminuria and moderate hypertension which will quickly disappear after delivery; or it may grow worse with a high B. P., much

albumen, casts and blood in the urine, with pre-eclamptic symptoms ending in eclampsia if the cause is not promptly removed. Very severe kidney diseases will disappear on prompt removal of the cause, but sometimes an apparently moderately diseased kidney with the cause remaining for some time will not return to normal even after removal of the cause.

The causes of kidney disease during pregnancy may be listed as follows: first, any cause listed under the causes of kidney disease in a non-pregnant woman, such as, focal infection, physical and chemical poisons, exposure to cold, indiscretion in diet, acute infections, etc. Second, pyelitis; third, the fetus acting as an increased burden on a kidney which is already taxed almost to its limit; and fourth, the fetus acting as an exogenous toxin to the kidney; fifth, mechanical interference to elimination. Crowell and McKay, in 1928, emphasized the mechanical interference to drainage as being a cause to kidney disease during pregnancy, stating that anything which interferes with normal elimination of the kidney secretions inhibits its function and that undue nitrogenous tension is the result.

As a rule it is very difficult to distinguish between the types of kidney disease during pregnancy because the added strain of pregnancy tends to obscure the diagnosis of any particular form of nephritis. One of the most important things to aid one in this differentiation is a study of the patient before the pregnancy begins. Although this differentiation is a difficult thing to do, it is our duty to try to classify every case because it is by this method that we can correctly prognose each specific case and to be able to tell just when it is safe or unsafe for a patient to go on to term.

For the sake of convenience I have classified the kidney affections into four divisions: (1) the low reserve kidney of pregnancy; (2) nephritides, or better glomerulo-nephritides; (3) nephrosclerosis; (4) nephrosis.

By the term "low reserve kidney" we mean a kidney which is taxed to a limit which is considered safe for the mother to go to term and after term have an excellent chance to return to normal upon proper treatment; but beyond this limit it is unsafe because of the strong tendency to develop a permanent kidney damage, even if the patient does go on to term without developing convulsions. The low reserve kidney manifests itself in about 5% of all full term pregnancies. It is a mild toxemia of the latter half of gestation, not associated with permanent or progressive injury to the kidney, and not preceded by any renal damage. This toxemia may or may not reappear in a subsequent pregnancy, and if it does, it is usually not more severe. The diagnosis is made by the following features, a moderate rise in B. P., usually 150 systolic and 90 diastolic, and a relatively small amount of albumen in the urine, ranging from a fraction of a gram to 1 gram per liter. These manifestations of toxemia appear the last few months of pregnancy. There may also be some edema, and very rarely a complaint of headache. Of great importance in establishing the diagnosis by the fact that by the end pueperium the B. P. has reached its normal level, the urine is albumen free, and any edema that may have been present has disappeared.

At all times the blood chemistry is normal and nitrogenous content is normal in the urine.

In subsequent pregnancies a similar picture may recur or the patient may be entirely normal in these cases. Improvement generally follows this type of treatment and interruption is not indicated. If, however, the condition becomes worse, notwithstanding rest in bed and proper dietary treatment, we are most probably dealing with a chronic nephritis and not a low reserve kidney, in which case treatment may have to become more radical. Low reserve kidney, sometimes known as nephropathy, means a kidney which has the ability to eliminate urea, but does not excrete chlorides, resulting in edema, which may become quite extensive and is accompanied by a fairly normal diastolic B. P. Sometimes a salt free diet will improve the edema, but salt free diet alone will very rarely if ever affect the B. P.

Under the heading of nephritides, a term used to designate lesions in which inflammatory processes predominate and usually such lesions chiefly involve the glomeruli, we should consider the following: acute nephritis, or a better term according to Volhard is focal nephritis, a condition characterized by slight changes in the kidney of an inflammatory nature evidenced by albuminuria, hematuria and casts, but without impairment of renal function or edema or hypertension. This type of kidney thing may disappear promptly upon removal of the cause, rest in bed and liquid diet; and the patient may go on to term without further evidence of renal disturbance.

Glomerulo-nephritis is a term designating a lesion that is primarily or chiefly limited to the glomeruli, and the tubules are affected secondarily. The most important symptoms of glomerulo-nephritis are hypertension, edema, and more or less hematuria and albumen and casts. The most important feature of this form is the elevation of B. P. We practically never see a severe case of glomerulo-nephritis without a rise in B. P., and it is extremely rare to see convulsions of nephritic origin with a diastolic B. P. below 95 to 100. Headache is a common symptom and often is severe and often accompanied by epigastric pain and visual disturbances and may terminate in convulsions. Nausea and vomiting are common. The blood urea is always elevated and the phthalien function test is far below normal. In a series of reported cases the blood urea averaged 34 mg. per 100 cc. of blood, and the phthalien function tests averaged 38%. The danger of glomerulo-nephritis during pregnancy cannot be over estimated. It is rare for a well developed case of glomerulo-nephritis to get well without removal of the cause and the tendency is for the disease to progress until the cause is removed. Very mild cases when caught early may upon very careful treatment get well and the patient go on to term without further interference and some fairly well developed cases under very rigid care may be arrested enough to allow the patient to go on far enough to get a viable baby.

As long as the systolic B. P. is not above 150 or 160 and the diastolic pressure is below 95, the blood urea not above 35 mg. per 100 cc of blood and the amount of albumen in the urine not above one gram and there is an absence of pre-eclamptic symptoms, the patient may be put to bed on a liquid diet and saline purgatives. If this condition does not

improve in seven to ten days the induction of labor should be considered. If the condition becomes the least worse, labor should be induced immediately. It must be remembered that it is in this very condition, that it is not the primary purpose to prevent convulsions, but also to prevent a permanently damaged kidney—a thing which is so likely to follow from this type of nephritis.

This is the type of nephritis that most commonly causes the nephritic form of eclampsia. This form of kidney disease will give rise to a condition resembling eclampsia in a non-pregnant woman. Recently I saw a woman with the typical pre-eclamptic syndrome, consisting of an elevated diastolic and systolic B. P., severe headache, dizziness, spots before the eyes, edema, extreme nervousness and slight convulsive seizures, and epigastric pain. This woman was not pregnant and in my opinion proves that some eclampsias are purely cases of acute glomerulo-nephritis with the fetus acting as the exciting cause. I think it is true to state that it is this type of eclampsia which offers the best immediate risk and the poorest risk as regards the woman's future. The greatest risk in the liver type of eclampsia is immediate and, if the cause is removed before a severe kidney thing develops, the mother will recover entirely and very likely in her future pregnancies go on to term without any effect from her previous injury; but where there has been a true definite glomerulo-nephritis she may look forward in her future pregnancies to an exaggeration of the permanent injury without much disappointment. Each recurring pregnancy will contribute something and so often the non-pregnant living will gradually increase the injury set up during pregnancy; therefore, the proper deduction to be made is to induce labor early in this type of well developed kidney affection. The sooner the induction the less the risk of permanent injury. The duration has more significance probably than the severity of the disease at the time of induction of labor. It may be stated that there is a recurrence of liver toxemias in only two per cent of later pregnancies, while the per cent of recurrences in kidney injuries is very high.

One of the most serious types of kidney affections during pregnancy is an acute nephritis superimposed on an old chronic interstitial thing or on a chronic glomerulo thing. It is sometimes very difficult to diagnose this condition. In this condition the history is very important; a history of hypertension, a history of nocturia, a history of voiding small quantities of urine during the day at frequent intervals. On physical examination there is an enlargement of the heart downward and to the left with a systolic murmur at the apex. If the heart is strong enough, there is an increase in the systolic B. P. and very likely a rise in the diastolic out of proportion to the rise in systolic pressure. In case of myocardial weakness there is very often a decrease in the pressure, especially the systolic. The kidney function is usually quite low. In such an instance labor should be induced immediately. The urine usually has a low fixed spg.

Nephrosis is a rare condition seen coming on during pregnancy; it is most commonly seen as a distinct entity with pregnancy bringing on an extra burden upon it. Nephrosis is a term used to designate the diseases of the kidney in which the tubules are chiefly involved. True

nephrosis is characterized clinically by the following features: rarity with which red blood cells are found in the urine, the presence of edema for weeks or months and this edema may become enormous during pregnancy, and a prolonged course which may end in recovery despite frequent exaccerbations, scanty urine, absence of hypertension and absence of renal insufficiency.

The urine examination in true nephrosis presents large amounts of albumen, hyalin and granular casts, a spg., which is not fixed, absence of red blood cell, and the urine is usually scanty in amount. Blood chemistry examinations show an increase in chlorides and cholesterol by normal urea and creatinine. The function tests are usually normal. The kidney affections arising during pregnancy which are in this class have the best prognosis and therefore the importance of a diagnosis because the patient may go on in this condition without much fear of developing convulsions before term or developing a permanently impaired kidney after delivery. It must be remembered that the other types of kidney affections may be superimposed on this condition, and in such an instance the conservative method of treatment must be abandoned. In interstitial nephritis without either glomerular or tubular complication, there is an absence of edema as a rule and if present it is not marked; the urine is present in large amounts with a low fixed spg., and is accompanied by increased arterial tension.

Glomerulo-nephritis usually has an acute onset, red blood cells in the urine, increased non-protein nitrogen in the blood, edema, increased arterial tension, with a tendency to terminate in uremia. Tubular nephritis presents albumen in the urine with casts but without red blood cells, normal non-protein nitrogen and normal arterial tension and marked edema very rarely terminating in uremia.

Of all the prognostic and diagnostic indicators, the B. P. is the most important. So often there is a rise in B. P. before there is any change in kidney function, and it may be said with safety that if there is an increase in B. P. for any prolonged period of time, there will most surely be a kidney damage in some degree. An increase in B. P. is more often the antecedent than it is the result of the kidney injury. In so many instances in toxemia of late pregnancy there is first a liver injury, next a rise in B. P. followed by the kidney damage; and, the rise in B. P. is an index both to the liver injury and an index as to what is to happen to the kidney. Since the liver function tests are in their infancy we must depend on the rise in B. P. and symptoms to tell us how much liver damage is done. Probably the diastolic pressure is more important than the systolic. Someone has said that eclamptic convulsions do not occur unless the diastolic B. P. is above 90 or 100. The systolic pressure represents the heart because the heart is the pump which must have the power and the strain to shoot the fluid to such a high level; and it is an index as to the liability of a permanent damage to the heart itself and liability to apoplexy.

The diastolic pressure represents peripheral resistance which is due to a decrease in the calibre of the smaller blood vessels. The change in the size of the lumen of the blood vessels is due first, according to McNider and other authorities, to a spasm and if this spasm remains long

enough, it will become an organic change in the walls of the vessels terminating in an organic change in the general circulation and especially the blood vessels and interstitial tissue of the kidney. Therefore the diastolic pressure represents the index as to the kidney damage in the future as well as the liability to convulsions immediately. The patient's future is better to have had a rather severe rise and to have a convulsion and get rid of the cause than to have a moderately severe rise and go on to term.

Example: Wherever there is a rise in B. P. complicating nephritis, one may be fairly certain that there is an involvement of the vascular system of the kidney and especially the glomeruli, and the involvement of the vascular system is usually proportionate to the rise in B. P.; and it may be stated with considerable certainty that the longer the duration of this rise in B. P., the more likelihood of a permanent change in the blood vessels. This being true, there is a definite indication for removal of the cause not only to prevent convulsions but to prevent permanent damage to the whole cardio-vascular-renal system.

A high diastolic pressure is of more importance than the systolic, not only because it is a better index as to the development of convulsions, but because a long continued rise in diastolic pressure resulting in diseased vascular-renal system has a much less recuperative power than the heart which is affected by the systolic pressure. Probably the most important reason for watching the systolic pressure is to prevent an apoplectic seizure, a thing which is largely dependent on the systolic pressure and not on the diastolic pressure.

Irving studied five thousand consecutive pregnancies at the Boston Lying-In Hospital, and believes that an elevation in B. P. a better index of toxemia and also an earlier sign of toxemia than is albuminuria. Furthermore, the degree of elevation of B. P. is of more significance than the amount of albumen. Williamson states that "hypertension may occur during pregnancy without any involvement of the kidneys." This type is of vascular origin caused by the action of the toxin on the arterial wall, but if this lasts long enough there will surely develop a kidney thing and also a heart thing.

Albuminuria during pregnancy may be divided into four classes: (1) An unimportant group with only slight albuminuria; (2) albuminuria with slight edema or hypertension; (3) albuminuria with much edema and hypertension; (4) albuminuria without much edema and hypertension but with much marked nitrogen retension. For this classification we must know the percentage of albumen and the casts in the urine. The B. P. is normal in nephrosis and any rise in B. P. is indicative of another process being superimposed on the present one.

It is not the purpose of this paper to discuss eclampsia except to mention the part the kidneys play in eclampsia. Except in pure nephritic eclampsia which is probably an acute glomerulo-nephritis of an acute exaccerbation of a chronic interstitial thing, or chronic glomerular thing, the kidney involvement is entirely secondary to the liver thing. The usual sequence is first, liver injury; second, elevation of B. P.; and third, kidney damage.

Sometimes the kidney does not make its appearance until the woman

is delivered. In this condition the blood chemistry is usually normal even if there are albumen and casts in the urine; and in the majority of instances the function tests are normal.

In this type of eclampsia the danger is immediate, and if the cause is removed, the patient goes 48 to 72 hours without developing convulsions, she has an excellent chance to convalesce completely without any permanent kidney damage and may go through future pregnancies without either a kidney or liver change.

In the purely nephritic toxemia characterized by high urea and low function tests the danger is not only immediate, but the woman's future kidney function may be permanently impaired; this, of course depending upon the duration of this kidney injury before removal of the cause. In my opinion, any case of moderately severe liver toxemia which does not react promptly to treatment, the cause should be removed as soon as possible because the kidney thing is sure to follow and convulsions are most apt to occur. In the slowly developing kidney things, liquid diet and rest in bed may postpone convulsions until after delivery or perhaps not at all; but while this is being done, if the urine has not cleared up and the B. P. returned to normal, this woman though having a full term baby is probably permanently impaired and may in the near future have a definitely developed cardio-vascular-renal disease, for which we have no cure.

Chairman Ross: The paper of Dr. Spikes is now open for discussion.

Dr. G. R. Cheatham (Raleigh): There are a few points I think we should go over. I think there should be emphasis on blood pressure. I think it is the substance of the whole thing. It is the decidedly most important diagnostic or prognostic point.

In connection with the blood pressure, he mentioned capillary spasms of MacNider. Dr. Beale, who is probably the father of microscopic study of capillaries, states in toxemias of pregnancy we do have capillary spasm. This leads to decreased blood supply of the glomeruli and consequent degeneration. If toxemia is allowed to persist with blood pressure around 100, the kidney damage becomes permanent.

Dr. Spikes has brought out the fact that we don't interrupt pregnancy so much for the immediate effects as to prevent permanent kidney damage, as brought out in the capillary spasm. He has given some rather definite indications as to when to interrupt pregnancy and when not to. This includes diastolic blood pressure around 90 to 95, blood urea over 35, plus one gram per liter of albumin in the urine. When we have those conditions we have a kidney already seriously enough damaged. If we let pregnancy go on we will have permanent kidney damage which will lead to serious consequences in future pregnancies.

Dr. J. S. Brewer (Roseboro): Dr. Spikes covered the subject so comprehensively that there is not much to say except to agree with him. In the conduct of pregnancy and of labor, this is a subject of so much importance I think it ought not to go by without considerable emphasis. The doctor mentioned that at the present time labor was considered by a lot of people as being pathological. With that I am in entire agreement.

Probably in the beginning of things, labor was a normal, physiological thing, but civilization has brought with it certain impedimenta to normal physiology, and under this influence labor is often pathological. I think for practical purposes it is well enough to consider it a pathologic state.

Of all the problems of pregnancy and labor, I think the problem of the kidney is the most important. The trauma of labor belongs to surgery, but trauma to the kidney, to the heart and blood vessels does not, and we are solely dependent upon regenerative powers of nature for what repair may be done to a damaged heart or blood vessel or kidney during pregnancy and labor.

In considering the kidney of pregnancy, I am more concerned from the standpoint of chronic nephritis than from the standpoint of eclampsia, recognizing, of course, that eclampsia is considered a serious thing. But once a patient goes through the eclamptic explosion, she usually gets well in a few weeks, the kidney and blood pressure are again normal. It is not believed that she is any more subject to an eclamptic attack later in other pregnancies than if she had not had it in the first instance. It is generally an incidence of first pregnancy. That is not the case with nephritis—the more pregnancies, the more damage to the kidney and the greater the danger of permanent nephritis in these cases.

The doctor mentioned the question of diastolic blood pressure. That, I think, is by far the most important thing to be considered in blood pressure reading. I can stand a high systolic pressure in a pregnant woman without getting very nervous, but if the diastolic gets in the neighborhood of 100 or a little above, I begin to get nervous. That is particularly true if the kidney shows much albumin in the urine.

We will have a patient who we believe is probably chronic. She will run a high systolic blood pressure, probably 180, 190 to 200, and a diastolic blood pressure up to 90 or 95, and there will be only a trace of albumin in the urine. You are comparatively safe in being conservative with a woman of that kind.

Likewise, you may have a woman who has low albumin in the urine, but a blood pressure within the extremes of normal. That woman is not likely to give a great deal of trouble, but if you have one of these women who has high blood pressure and suddenly the kidney gives way, and where you have a trace of albumin are confronted with a large amount of albumin with a preponderance of casts, then you are in for trouble.

The same applies to the kidney with normal blood pressure and a lot of albumin in which the blood pressure goes up. I think the greatest problem in this case is preventing nephritis. When once a woman has had several children and we can put her in the class of chronic nephritis, then I think she should be sterilized. That is not birth control. That is preventive medicine.

We wage a great campaign to prevent the communicable diseases so why shouldn't we prevent degenerative diseases? We all see women go through numerous pregnancies with changes in kidney, blood pressure always a little higher, kidney damage always a little worse. After labor it takes a little longer for the blood pressure to come down within a reasonable limit and that gets worse at each pregnancy. So why not

save some of those women by preventing future conception? It is preventive medicine, not birth control.

CHAIRMAN ROSS: The next paper is "Utero-Salpingography as an Aid in Gynecologic Diagnosis," by Dr. Donnell B. Cobb.

THE VALUE OF UTEROSALPINGOGRAPHY

DONNELL B. COBB, B.S., M.D., M.S., F.A.C.S.

The visualization of some of the body cavities and hollow viscera by the use of opaque media has for sometime been an accepted diagnostic procedure. Sicard and Forestier (16) in 1922 first reported the use of lipiodol as an aid in diagnosing spinal cord tumors. Sidney Forsdike (3) of London, was the first to inject it into the uterus as a diagnostic measure, and in 1925 he reported this method before the Royal Society of Medicine. Since then, uterosalpingography has been gradually increasing in popularity as a means of enhancing the accuracy of gynecological diagnosis.

During the last few years the American and foreign literature has contained a number of interesting articles on this subject. As is not infrequently the case with something that is new, its diagnostic possibilities have been extolled beyond the point of practicability, and the dangers from its use at times have been unjustly magnified. With a better realization of its limitations, and an acknowledgment of its contraindications it will remain an important aid in diagnosing the affections of the female pelvis. Never can it supplant a careful history and a thorough examination, and only when used in conjunction with these can it obtain its proper value.

I have employed this procedure since 1926, during which time I have found it a definite help in diagnosing most of the conditions that affect the female pelvis. It has not been my practice to use it where a definite diagnosis could be made otherwise.

Before injecting the lipiodol into the uterine cavity, the vagina must be thoroughly cleansed and surgically prepared. A bivalve speculum is used to expose the cervix, and I have not found that its presence at the time of exposing the film interferes with the desirable data on the picture. The cervix is steadied by a vulsulla and it is essential that the injecting cannula be fitted with a collar that fits snugly against the cervix and prevents the escape of lipiodol into the vagina until after the X-ray exposure is made. Eight cc. of lipiodol is the amount usually employed. A previous bimanual examination to gain some idea as to the size of the uterus may indicate that this amount be decreased or increased. The only discomfort that I have found to be associated with the procedure is that accompanied by the passage of a sound through the cervix in determining the direction of the uterine cavity, and the slight cramping sensation that occurs when the uterus is completely filled, and somewhat distended. Having the patient on one of the standard Bucky equipped, urological tables will greatly facilitate the whole procedure. I have not hesitated to make uterosalpingograms on office patients, and do not believe it necessary to hospitalize a patient for the examination. On removing the cannula from the cervix, most of the lipiodol escapes into the vagina, and that which has passed through a

patent tube and entered the peritoneal cavity seems to produce no symptoms. On operating upon these patients a few hours to several weeks after the injection, I have never noticed any peritoneal irritation from the presence of the oil. Neither does it irritate the epithelial lining of the uterus and tubes. (18)

The procedure was first employed by me as an aid in the diagnosis of the causation of sterility. But it is obvious that much information regarding many pelvic conditions can thus be obtained, and its use has widened to furnish additional and specific data in the majority of pelvic affections in which an accurate diagnosis cannot otherwise be made.

In so far as studying the patency of the Fallopian tubes is concerned, it is far superior to the insufflation method as first advocated by Rubin. (7, 13) By its use a definite outline of the normal uterus and tubes is obtained, and thus the factor of tubal obstruction can definitely be ruled out as the causative factor in sterility. Also the exact localization of the occlusion, when present, can be shown, which is most important if salpingostomy is to be considered. (Figs. 1, 2, 3.)

In those cases presenting the symptoms of chronic salpingitis, but in which a bimanual palpation still leaves the examiner in doubt, an X-ray study of the uterus and tubes will decide the diagnosis. Either there will be a complete blockage to the flow of lipiodol, as when the inflammatory process involves the entire tube, or the lipiodol may be seen to extend through the lumen of the tube as a fine, irregular line, suggesting perisalpingitis with partial occlusion. (Figs. 4, 5, 6, 7.) In the differential diagnosis of chronic appendicitis and chronic salpingitis, it may not infrequently be the only means by which a definite preoperative diagnosis can be made. (Fig. 8.) I have used the procedure in 30 cases of salpingitis and have noticed no bad effects. I believe, however, in the average run of these cases, it is unjustifiable to risk the possibility of thus carrying an active infection into the peritoneal cavity. Claims have been made as to the therapeutic efficacy of the lipiodol in cases of salpingitis, but actual proof is lacking. (4, 8, 14) In those cases of acute salpingitis which have been subjected to this procedure without untoward effects, the reason for the absence of more or less serious consequence is, in all probability, due to the fact that the tubes were completely occluded at the cornua, and thus the oil was prevented from passing through the tubes and carrying infection into the peritoneal cavity, rather than from any curative effect of the oil itself on the inflammatory process.

In those cases presenting a cystic mass situated laterally in the pelvis a uterosalpingogram may be used to make a definite diagnosis between an enlargement of the tube, as in hydrosalpinx, and an enlargement of the ovary, as in cyst formation or dermoid growth. In the latter, the tube may also be occluded, it is true, but often it will appear normal, or will be greatly elongated and drawn out and displaced over the ovarian mass. (Figs. 9, 10.) Whereas, such a fine preoperative distinction in a condition that is obviously surgical may appear, and, at times is, of academic interest only, yet not infrequently the patient is most inquisitive regarding the condition of the ovaries, and will not accept the needed operation until a positive diagnosis can be made as to the exact nature of her condition.

In studying conditions of the uterus itself, uterosalpingography offers a very definite help. When there is a question as to the possibility of retained secundines following delivery and where a definite conclusion can not otherwise be reached, a uterogram will show the presence of retained material by an irregularity in the outline of the uterine cavity. (Fig. 11.) And at times, where a dilation and curettage has been done under adverse circumstances, and the subsequent course is not satisfactory, and yet there are other complicating factors in the case which make it impossible to say whether the uterus has been perforated, a uterogram will confirm or exclude the possibility of a perforation and enable intelligent treatment to be instituted. (Fig. 12.)

Uterine fibromata as a rule present no difficulty in diagnosis. Yet a uterogram will show a submucous growth that it has been impossible to palpate, and in cases of obesity, where bimanual examination is most unsatisfactory, an X-ray study of the uterus may reveal the presence of intramural or subserous growths. (9, 12) In those cases presenting themselves with a history suggestive of uterine fibroids, and in which the usual examinations do not allow a satisfactory diagnosis to be made, a uterogram will frequently clarify the existing condition. (Figs. 13, 14, 15, 16.)

Some objection has been raised to the use of uterosalpingography in cases of suspected malignancy of the body of the uterus on the grounds of possibly carrying cancerous cells through the Fallopian tubes into the peritoneal cavity. (8) Theoretically, of course, such a thing is possible. Yet it appears that the danger of disseminating cancer by this procedure is much less than by the usual diagnostic curettage, following which the uterine cavity contains innumerable unattached masses of cancerous cells which might possibly be carried along through the Fallopian tubes to the peritoneal cavity, or be picked up by the recently opened blood and lymph spaces in the uterine wall. Cancer of the body of the uterus presents a characteristic moth-eaten appearance in the uterogram, which finding, along with a suggestive history, justifies the diagnosis. (Fig. 17.) A curettage by removing tissue for microscopic study, permits a more absolute diagnosis, and still is the procedure of choice in those cases containing a large element of doubt.

There have been, and still are, advocates for the use of uterosalpingography in the diagnosis of early pregnancy, but in this connection the procedure is losing favor. (1, 6, 8) While it is easily possible to diagnose doubtful cases of pregnancy in this way, miscarriages have been reported following its use. (5, 11) A uterogram of a pregnant uterus will show the lipiodol irregularly placed between the uterine wall and the fœtal structure, or if the pregnancy is advanced, the entire amount of the injected oil may remain just within the cervix, being prevented from entering into the cavity of the body of the uterus by the close contact of the membranes with the uterine walls. Rarely is a diagnosis so urgent in a case of suspected pregnancy as to justify the risk of miscarriage subsequent to this procedure. As a rule, it should be reserved for those cases in which, if pregnancy is present, there is a definite preëxisting indication for its termination. (Figs. 18, 19, 20.) In cases of ectopic pregnancy in which the diagnosis in in doubt, it will

offer a distinct aid by showing the tube to be occluded, much dilated or ruptured. (10) (Fig. 21.)

In cases of uterine abnormalities, uterosalpingography offers the most accurate means of diagnosis. With its use many cases of amenorrhoea, sterility, and frequent miscarriages can be readily explained by such findings as infantile uterus, uterus unicornis, and bicornis, and septate uterus. (Figs. 22, 23, 24.)

The use of uterosalpingography combined with pneumoperitoneum and with cystography has been advocated as a means of obtaining even more specific diagnostic data. (17) I have been unable to find any reference in the literature of combining uterosalpingography with pyelo-ureterography. Not infrequently it is very difficult to determine by the usual examinations whether the presenting complaints in the female are genital or urinary in origin. When this is the case, it is well to proceed with a thorough urological investigation to be concluded with a pyelo-ureterogram combined with a uterosalpingogram. This may be done at the same time, on the same X-ray film, and essential data secured on the two very important systems with a saving of time and expense to the patient. (Fig. 25.) Having first done this in 1928, I have found it extremely helpful in 23 cases and have witnessed no disagreeable effects. This will be reported upon more fully at a later time.

Summary: Uterosalpingography is most helpful in diagnosing obscure conditions affecting the uterus, tubes and ovaries. Like any other diagnostic procedure, its fullest value will be obtained by becoming familiar with the procedure and knowing its shortcomings. It is not infallible. Its use should be discouraged in acute pelvic infections, in active uterine hemorrhage, immediately following a dilation and curettage, and in suspected pregnancy where an immediate diagnosis is not imperative or a therapeutic abortion indicated.

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Chairman Ross: Dr. H. B. Ivey will open the discussion. Dr. Ivey!

Dr. H. B. Ivey (Goldsboro): There is very little that I can add to Dr. Cobb's paper. He has covered his subject pretty thoroughly. I have had the pleasure and privilege of coöperating with him in this work, and he has gone into the diagnostic side, so I might answer some questions by giving the X-ray procedure. That is the point I have been interested in from the radiographic standpoint.

These pictures are made on an ordinary urological table with an ordinary universal tube, a 100 millimeter tube with a regular Bucky technique at 25 inches. You men who are accustomed to using the Bucky table know you have a slight angulation in it. To the man who is doing X-ray work that will practically cover the technique, a standard Bucky urological technique.

From the X-ray standpoint of examination of the genital tract, it has been quite a relief to men doing radiology to have this procedure developed. I don't know whether there are any men present who do that, but you very often have patients present themselves and ask for an X-ray picture. If you ask a patient what picture he wants, he will say he would like to be X-rayed all over. (Laughter) Along with that, before this procedure was perfected, we often had applications from patients to make pictures of the genital apparatus. As you know, before the advent of this we had nothing to offer those patients. We could make no radiological examination that was of any significance nor that would be of any real benefit to a patient. Consequently, we had to turn them away without granting the requests.

No we do feel that we have something definite to offer these people through the surgeon or gynecologist, and we not only satisfy that patient's desire for a picture of genital apparatus, but give the gynecologist and surgeons, we think, some real aid in diagnosis.

FIGURE 1

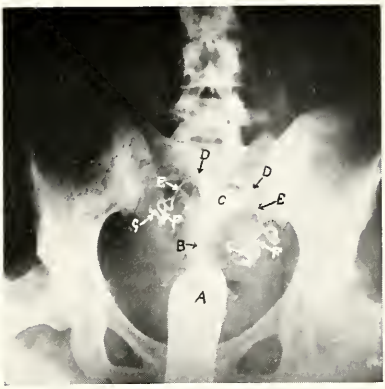
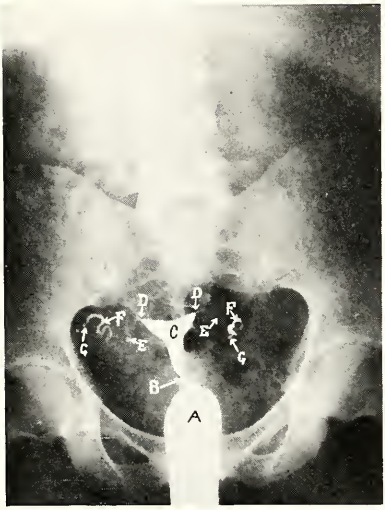


FIGURE 2



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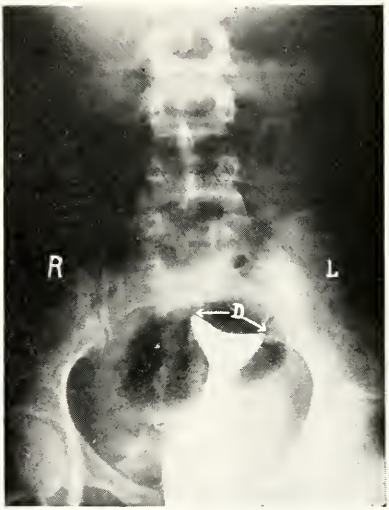

FIGURE 4

FIGURES 1, 2, 3. Uterosalpingograms of normal genital organs. A, Bivalve speculum in vagina. B, injecting cannula. C, triangular outline of uterine cavity. D, constricted area of tube at cornua. E, isthmus of tube. F, ampulla of tube. G, iodized oil free in peritoneal cavity. These three figures show different degrees of relaxation and contraction of the uterine walls, different degrees of length of the isthmic portions of the tubes, and different degrees of expansion of the ampulla. In Figure 3 only a small amount of the iodized oil has passed out into the peritoneal cavity. The deflection of the uterus to the right or left is due to traction on the cervix by the volsella.

FIGURES 4 AND 5. From the history and clinical findings in these two cases it was impossible to make a differential diagnosis between appendicitis and salpingitis. Uterograms show the uterine cavities of normal size and shape, but the tubes are completely occluded at the cornua. Operation through a low midline incision revealed bilateral salpingitis in Figure 4, and bilateral salpingitis with secondary subacute appendicitis in Figure 5.

FIGURE 5

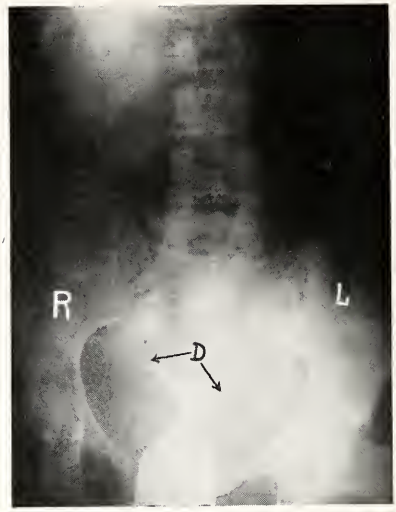

FIGURE 6

FIGURE 7

FIGURE 8

FIGURE 6. On presenting herself this case gave a definite history of pelvic pathology. Entire lack of coöperation made a bimanual examination untrustworthy. The uterogram revealed both tubes completely occluded at the cornua, D. The left cornua gave the appearance of being pressed upon and the uterus was tilted to the left. Exploration of the pelvis disclosed a large left tube-ovarian abscess with many adhesions and right salpingitis.

FIGURE 7. Bimanual examination disclosed enlargement, grade 2, of the left tube. A uterosalpingogram shows a small amount of iodized oil to have passed through the isthmic portion, E, of the left tube and contained within the ampulla, F, confirming the diagnosis of left salpingitis (peri-salpingitis). The uterine cavity is of normal size and shape and the right tube is patulous throughout its length. Iodized oil that has passed throught the right tube and into the peritoneal cavity is shown at G.

FIGURE 8. Again a definite diagnosis could not be made between appendicitis and salpingitis, although the latter seemed more probable. The uterosalpingogram reveals normal genital

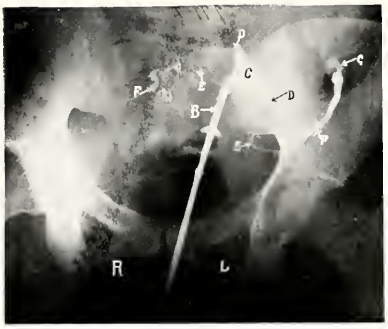

FIGURE 9

FIGURE 10

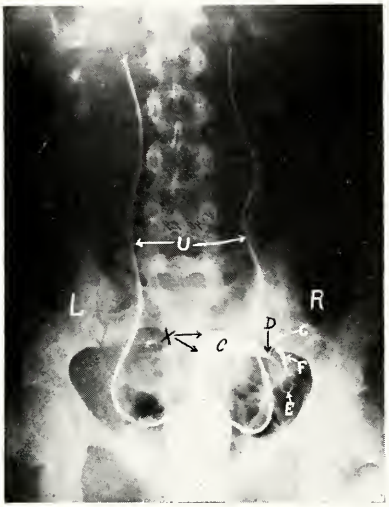

FIGURE 11

FIGURE 12

organs, thus justifying a McBurney incision through which an acutely inflamed appendix was removed. For explanation of the letters, see the legend for Figure 1.

FIGURE 9. A young, unmarried girl presented herself with a symmetrical tumor arising from the pelvis and extending above the umbilicus. Although she insisted that her menstrual periods had been regular, the cervix uteri was quite soft and discolored. The uterosalpingogram removed all doubt of a normal pregnancy, showing a normal uterine cavity markedly displaced to the left, and both tubes well open. At operation a six-pounds ovarian cyst was removed.

FIGURE 10. Clinical examination revealed a large tumor arising from the pelvis and extending up to the umbilicus. The uterogram disclosed a much distorted uterine cavity, C, displaced to the left, and both tubes closed at the cornua. At operation, a large cyst arising from the right ovary was found, and both tubes were bound down in an old inflammatory mass.

FIGURE 11. This case had had a normal delivery two weeks previously. Eight days later there was a rather sudden onset of chills and high fever. Clinical examination was negative except for marked leukocytosis and pyuria, which did not seem sufficient to account for the symptoms. A bimanual examination revealed nothing abnormal. With catheters, U, in each kidney pelvis, for the treatment of the bilateral pyelitis, a uterosalpingogram was made. This showed the left side of the uterus to be abnormally filled, X. A dilatation and curettage was

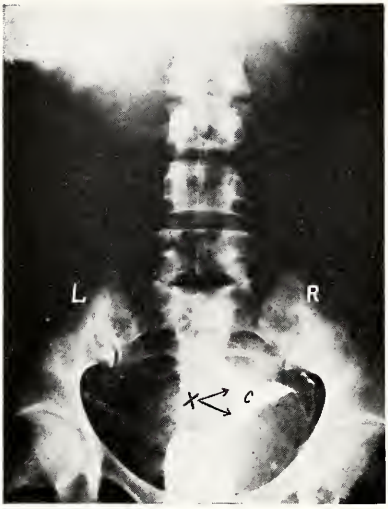

FIGURE 13

FIGURE 14

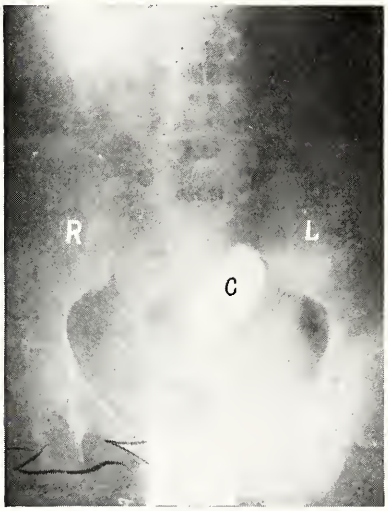

FIGURE 15

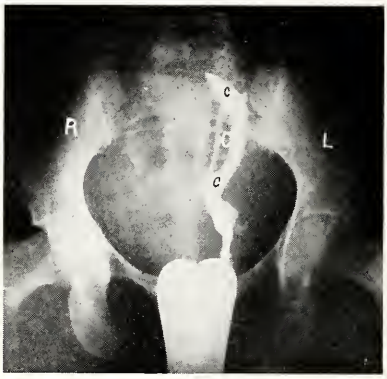

FIGURE 16

done, removing a mass of hard, necrotic tissue from the left side of the uterus. For explanation of other letters see the legend for Figure 1.

FIGURE 12. This case had had a dilatation and curettage under adverse circumstances in her home following an incomplete miscarriage. A perforated uterus was suspected at the time of consultation, but a co existent acute cholecystitis clouded the diagnosis. An X-ray study revealed a large perforation, X, in the fundus with a large amount of iodized oil free in the peritoneal cavity, G. Free oil was also shown in the vagina, H. With closure of the perforation and free drainage, recovery was rapid.

FIGURE 13. This uterosalpingogram shows a prominent indenture at the top of the fundus. The encroachment on the uterine cavity, X, was due to a submucous fibroid, the condition suspected on physical examination. Recovery from menorrhagia was complete following intrauterine radium therapy by Dr. H. B. Ivey.

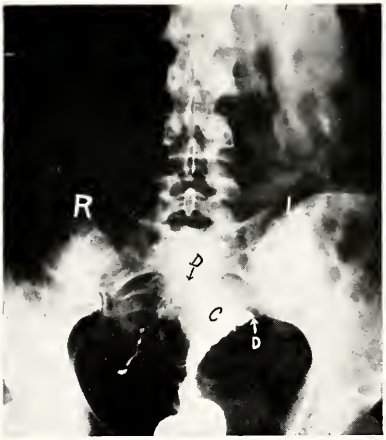

FIGURE 17

FIGURE 18

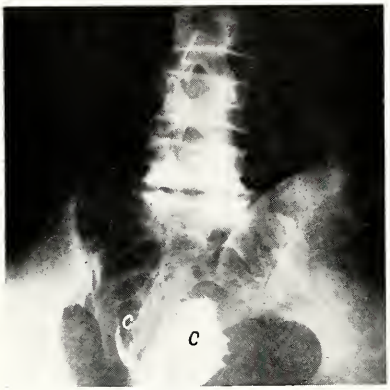

FIGURE 19

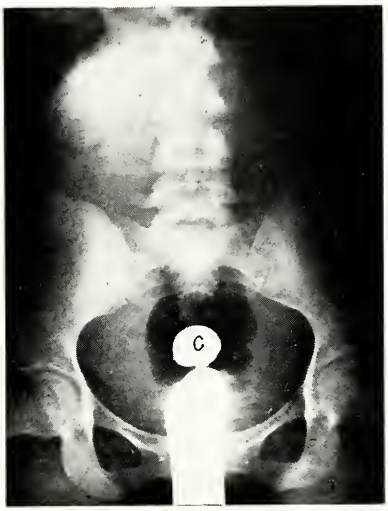

FIGURE 20

FIGURE 14. Uterosalpingography confirmed the clinical diagnosis of uterine fibroid. Both tubes are entirely open, but the uterus is displaced in a horizontal position and the uterine cavity, C, is being encroached upon at X. Operation revealed a fibroid which was removed by myomectomy.

FIGURES 15 AND 16. These uterograms delineate the bizarre distortion of the uterine cavity, C, that occurs from multiple fibroids.

FIGURE 17. This patient, age 44 years, gave a history of uterine bleeding and profuse, irritating, and foul leukorrhoea for two months. Clinical examination was negative. A uterosalpingogram disclosed a uterine cavity of normal size, but with a diffuse moth-eaten appearance. A pan-hysterectomy was performed on the diagnosis of malignancy, and a pathological study showed alveolar carcinoma.

FIGURES 18, 19, 20. These uterosalpingograms show the various pictures to be had in pregnancy. Figure 18 shows the lipiodol diffusely placed between the uterine wall and the foetal structures, C. This case was so obese that a pelvic examination was impossible. The menstrual history suggested pregnancy of one month with an incomplete miscarriage. On curettage, the foetal structures were removed. Figure 19 shows the iodized oil between the uterine wall and foetal structure, G, in a case of three months pregnancy in which therapeutic abortion was indicated. Figure 20. This patient presented herself with sudden, stabbing pain in

FIGURE 21

FIGURE 22

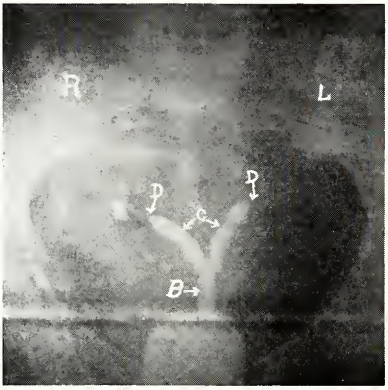

FIGURE 23

FIGURE 24

the lower right quadrant, the last menstrual period having been three months previously. Examination showed marked muscular rigidity on the right side, and exquisite tenderness on the right side of the pelvis. A large mass was palpable on the right side of the pelvis, but on account of the intense pain, a satisfactory palpation could not be made. Clinically, the case seemed to be one of ruptured ectopic pregnancy. A uterogram showed the iodized oil to be confined just within the internal os and pushing the membranes upward. This changed the diagnosis to normal pregnancy and acute appendicitis. An acutely inflamed appendix was removed through a McBurney incision.

FIGURE 21. This is a case of ruptured tubal pregnancy. The uterosalpingogram shows a rupture in the isthmic portion of the right tube, X, with iodized oil free in the peritoneal cavity, G.

FIGURES 22, 23 AND 24. Uterosalpingograms of congenital abnormalities. Figure 22 shows a uterus unicornis. This patient was 19 years of age, had been married for two years, had never menstruated and presented herself with the complaint of sterility. A complete examination revealed no endocrine deficiency other than the amenorrhoea. Pelvic examination

FIGURE 25

showed an infantile cervix and the uterus could not be palpated. The uterine horn, C, that is present is exceedingly small and there is no corresponding tube. This patient, of course, was given a definite prognosis of permanent sterility. Figure 23 shows a uterus bicornis, C, the right tube, X, is patulous, but the left tube is completely occluded at the cornua, D. This patient was thirty years of age, had been married six years and complained of sterility. One year after this examination she became pregnant in the right horn of the uterus but miscarried at six months. Figure 24. This patient was examined and operated upon for a dermoid cyst of the right ovary, the right tube being bound densely in to the same inflammatory mass. The uterosalpingogram is very suggestive of a bicornate uterus, C. At operation, however, the uterus was normal in appearance except for a slight indenture at the top of the fundus; a case of pronounced septate uterus. She was thirty years of age and had had one normal delivery at full term, followed by one miscarriage at two months.

FIGURE 25. Normal uterosalpingogram combined with normal bilateral pyeloureterogram. Such a procedure I believe to be harmless and in certain cases extremely valuable from the standpoint of differential diagnosis. The ureterograms, U, give definite knowledge of the relation of the ureters to any pelvic pathology, and the pyelograms, P, will help to exclude any kidney pathology in those doubtful cases presenting symptoms of the urinary and genital systems. For explanation of other letters, see legend for Figure 1.

From an economical standpoint, I should like to say just a word about the last film that was presented. You could not see it very well, but there was on this film a double pyelogram with this uterogram, and as Dr. Cobb told you, we have done 23 of these. That is a great economy to the patient who is limited in means, and most of them seem to be that way at the present time. With one sitting, you give the patient a double picture. You are enabled to tell him something of his urinary tract and his genital tract at the expense of one picture.

That means a great deal to the average patient who is coming in to the clinic. It means a great deal to the radiologist when he comes in on the free side of the clinic, when you are having to furnish the material. It is a great saving to you, and likewise, it is a saving to the patient.

I should like to say in all these cases that I have seen with Dr. Cobb, I have seen no untoward effect from either of the procedures, the uterogram or the combination of the two. The combination of the two, we believe, is new. I have not seen this in any literature. We are not claiming any great thing for it except from the economical standpoint, and we bring this out.

Also, we would like to bring out the point that it is not dangerous and hazardous—that is, the combination of the two is not. It could be used to great advantage especially in free clinics and semi-pay clinics, to some benefit of the patient and the doctor. (Applause)

Chairman Ross: I personally want to thank Dr. Cobb for this series of cases. It has been very enlightening to me. I had some slides to show, but I will dispense with those as he has covered them.

There are one or two points he did not emphasize. One is the fact that we cannot dispense with fluoroscopic aid. I know he does it as well as most of us. By fluoroscopic control we can tell how much to inject. There is no danger of rupture and no danger of any untoward results from overpressure. By careful control with the fluoroscope, we can get the amount of fluid necessary.

Also, the use of the bimanual examination which he did emphasize is very noteworthy because we can in that way outline masses and get information and data which we otherwise could not. The use of this in pregnancy should be discouraged. I have used it three times, two having gone on to labor that I know of, and were satisfactory. In the latter months of pregnancy it can be used. I personally used it one time where there was a question of whether or not the woman had intrauterine pregnancy or abdominal pregnancy. There was some question in our minds. Of course, in that instance no harm resulted. You can use it in your office. I have never seen untoward results from it. Hospitalization has not been necessary in a single instance, and it is another means we have where more information can be obtained.

Chairman Ross: The next paper is "Secondary Anemia of Pregnancy," by Dr. Brodie C. Nalle of Charlotte.

SECONDARY OR PHYSIOLOGIC ANEMIAS OF PREGNANCY

Brodie C. Nalle, M.A., M.D., F.A.C.S., Charlotte, N. C.

While reviewing the literature upon the anemias of pregnancy in preparation of a previous paper read at the Southern Medical Society, I was surprised to discover that of about one hundred papers upon this subject the great majority of these were upon Pernicious Anemia or Pernicious Like Anemia of Pregnancy and only three or four considered the Secondary or Physiologic Anemia of Pregnancy. Since that time Blaud, of Philadelphia, has published a most interesting paper upon Secondary Anemia of Pregnancy and of the puerperium and the blood findings occurring in both his private and in his ward patients. The comparison of the blood findings between his private and ward patients and of my own findings with Dr. Blaud's I feel will be of interest and will prove to be an argument in support of the plea, which I wish to make in this paper, for the early and repeated examinations of the blood of all pregnant cases and for their treatment. Certainly the routine blood examination in all pregnant cases has long ago convinced me that there is practically constant an anemia in pregnancy of greater severity than is generally acknowledged, and that this anemia frequently, if undetected and untreated, becomes so severe as to interfere seriously with the well being of our patients and adds to their susceptibility to many of the ills of pregnancy and of the puerperium. A great part of our available literature upon this subject has been devoted to the discussion as to whether the extreme cases of anemia of pregnancy are true primary pernicious anemias of the Addisonian type or whether they are secondary anemias pernicious-like in their picture. A good many of the early observers were of the opinion that these severe cases were true primary anemia, but more recent observers insist that these cases are not true primary anemia but are secondary anemias presenting a pernicious-like picture.

Adler is of the opinion that true pernicious anemia and the pernicious-like anemia of pregnancy are not the same and says true pernicious anemia of the Addisonian type rarely occurs in pregnancy.

Pepper says, "Severe so-called pernicious anemia of pregnancy is not identical with Addisonian anemia. The grade of anemia may be as marked and certain features of the blood picture suggestive, but other essential criteria are lacking."

William Allan describes the pernicious-like anemia of pregnancy as an acute anemia progressing without remissions, occurring in 75% of cases under thirty-five years of age curable by blood transfusion, while Addisonian anemia is essentially a chronic anemia occurring predominantly in men over thirty-five years of age and runs a course characterized by remissions, not curable by blood transfusion.

Certainly the more recent consensus of opinion is that these severe cases of anemia are not of the primary type. And I feel that it is reasonable to conclude that these pernicious-like anemias of pregnancy occur as the result of unnoticed and untreated cases in patients who are suffering with some other cause of anemia such as hook-worm, malaria,

pyelitis, and other infections in addition to the physiologic demand of pregnancy, or possibly only to the fact that our patient's blood making ability is far from being equal to the demands of pregnancy and as this demand increases the blood picture becomes worse and finally assumes a pernicious-like picture.

No definite cause is known for the anemia of pregnancy although many theories have been advanced. The hygienic conditions under which the patient lives have an influence, although rather severe cases occur under the best hygienic conditions. The age and parity (according to Blaud) do not seem to have any influence. A preëxisting anemia with the demands of pregnancy superimposed necessarily gives the patient a decided disadvantage. It is pretty generally conceded that there is a definite so called physiologic anemia of pregnancy of varying degrees of severity dependent upon pregnancy itself and that this anemia shows almost an immediate tendency to improvement after delivery. A good many observers have shown that there is frequently a decided improvement in a few days following delivery and marked improvement within a few weeks. Blaud has reported a series of fifty cases of marked anemia of pregnancy with red cells varying from 2,300,000 to 3,980,000; 92% of which spontaneously recovered from their anemia in six months. He also found that 34 of 48 women (71%) having red cell counts below 3,500,000 in the last three months of pregnancy, gained over 200,000 cells per cubic millimetre within ten days after delivery. The findings in two cases of my own series I feel will further substantiate the fact that there is an anemia due to pregnancy alone. The blood examination in one case seen four weeks before conception showed 5,200,000 red cells and hemoglobin 90%. This case was not seen again nor examined until the seventh month of pregnancy; at this time her red cells were 3,500,000 and hemoglobin 65%. Another case whose blood was examined three weeks before conception showed 4,250,000 red cells and hemoglobin 90%. She was not seen nor examined until her eighth month; her red cells then were 3,500,000 and hemoglobin 45%. Both of these patients denied the history of any intermediate sickness which could have been responsible for their marked anemia and both cases live under unusually good hygienic conditions.

These findings of various observers seem to furnish rather conclusive proof of an anemia of pregnancy due to pregnancy itself. The symptoms of this anemia are not different from any other secondary anemia except that the appearance of the patient is much more deceptive. The examination of the blood is the only reliable means of arriving at the true condition of the blood.

I wish to present the blood finding in 200 consecutive cases of pregnancy among private patients, the great majority of whom had the advantage of good hygienic conditions, diet, and observation throughout their pregnancy and who apparently did not have any additional cause of anemia during their pregnancy. The tabulation of the blood findings in this series shows, I think, some rather interesting points. Among the comparatively few cases observed through two pregnancies the blood picture for the same patient for the corresponding months of each pregnancy was practically the same. It also shows that the anemia was

progressive from the beginning of pregnancy through the seventh month in spite of good hygiene, diet and treatment, and that the 8th and 9th months showed an improvement in the blood picture. The most marked cases of anemia were without exception among the cases who presented themselves late in pregnancy for observation.

The general average of the blood examinations of 200 cases made showed:

3rd month	red cells	4,300,000	Hgb.	80%
4th month	red cells	4,200,000	Hgb.	78%
5th month	red cells	3,950,000	Hgb.	73%
6th month	red cells	3,880,000	Hgb.	72%
7th month	red cells	3,820,000	Hgb.	70%
8th month	red cells	3,880,000	Hgb.	73%
9th month	red cells	4,250,000	Hgb.	73%

This means that the average blood picture maintained through pregnancy in these 200 treated cases was 4,000,000 red cells and hemoglobin 74%.

It also shows that in this series:

50% had less than 4,000,000 red cells.
22% had less than 3,500,000 red cells.
2% had less than 3,000,000 red cells.
64½% had less than 75% hemoglobin.
31% had less than 65% hemoglobin.
2% had less than 50% hemoglobin.

Of this 2% (4 cases) two were not seen till the 8th month; one was not seen till the 6th month and one was not seen till the 7th month. And neither had been treated.

It is interesting to note how nearly the findings in Blaud's series of 100 private patients correspond to those of my 200 private patients. Blaud found 62½ per cent had less than 75% hemoglobin and we found 64½% had less than 75% hemoglobin.

Galloway reports of 243, hemoglobin tests made during all months of pregnancy an average of 71%. The average red cell count in 194 examinations gave an average of 3,660,000, as compared to 74% and 4,000,000 made in my series.

Blaud's findings in 200 ward patients, who had not had the advantage of good hygienic conditions and treatment show that 50% of his series had less than 3,500,000 red cells as compared to 22% in my series, and 26% of his had less than 3,000,000 red cells as compared to 2% in my series.

It is rather an astonishing fact that there were twice as many cases in the untreated series with red cells less than 3,500,000 as there were in either treated series, which means that one-half of al lthe untreated cases had less than 3,500,000 red cells, and I want to call particular attention to the ill effects which may result from such a condition.

McSwinney claims that the severe anemias predispose to miscarriage and premature births.

King claims that pregnant cases suffering with anemia and hookworm disease show a decided predisposition to the toxemias of preg-

nancy as well as to miscarriages and premature births; and is of the opinion that these predispositions are more probably due to the anemia than to any specific toxin of hookworm.

Galloway says the pernicious-like anemia occurs only in the last few months of pregnancy or during the early puerperium, and the reported cases all apparently have been cases that have had little or no prenatal care.

My own observations have convinced me that in untreated cases of pregnancy at least fifty per cent will have an anemia of such severity, as to interfere seriously with their well being during pregnancy, lower their resistance to the diseases and infections of pregnancy and of the puerperium, predispose them to the toxemias of pregnancy and cause more frequent miscarriages and premature births; as well as impair their physical endurance during labor. The avoidance of any one of these complications would justify the early and repeated examination of the blood in pregnant cases. The detection and treatment of the mild anemia should occupy a prominent place in pre-natal care. The detection of a persisting anemia and of the usual causes of secondary anemia and their removal as far as possible constitutes preventive treatment.

Treatment should be begun before the anemia assumes a severe picture for by so doing we can avoid such heroic measures as become necessary in the severe anemias.

A good iron producing diet with the administration of iron or iron and arsenic by mouth is sufficient in the majority of mild cases. If the anemia progresses in spite of this treatment, resort to iron and arsenic intravenously, and a liver diet and exposure to the violet ray are generally effective.

Chester Kepper claims better results in the treatment of secondary anemia when liver and iron are used in conjunction than when either is administered alone.

Porter, of Richmond, Virginia, claims that liver extract is particularly effective in the severe forms of anemia of pregnancy.

Blood transfusions become necessary in the severe pernicious-like anemia and have proven most effective and should supplement other treatment. The following is the result of treatment by blood transfusion of a referred case seen six weeks after delivery:

6/12/29: hemoglobin 15% red cells 992,000.
6/13/29: blood transfusion of 500 cc
6/16/29: blood transfusion of 500 cc
6/19/29: hemoglobin 40% red cells 2,000,000.
6/24/29: hemoglobin 50% red cells 2,250,000.

CONCLUSIONS

1. That there is an anemia of pregnancy, so called physiologic anemia, of varying severity presenting either a secondary or pernicious-like picture.

2. That this pernicious-like anemia is not a true primary pernicious anemia, and is preventable and curable.

3. That blood study is of great importance and deserves a prominent place in pre-natal care.

4. That a severe anemia, with red cells less than 3,500,000, occurs twice as often during pregnancy in untreated cases as in treated cases.

5. That the failure to detect and treat the anemia of pregnancy predisposes our patient to many of the ills and complications of pregnancy and the puerperium.

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DISCUSSION

Chairman Ross: Dr. Wm. Allan will open the discussion.

Dr. William Allan (Charlotte): Mr. Chairman and Gentlemen: I think the two reports which we have had today, one by Dr. Kinlaw this morning and the one of Dr. Nalle this afternoon, on anemias of pregnancy emphasize how much we still need to know about anemia. As far as I know, the only cause of anemia that we are dead sure of is anemia due to hemorrhage in which we actually lose blood.

We are still groping around for a reasonable explanation of the hemolytic anemia and the so-called secondary anemia. In these hemolytic anemias, chronic pernicious anemia and acute hemolytic anemia in pregnancy, it was thought for a long time the blood-destroying process in the body outbalanced the blood-making process. That was one idea of the cause of hemolytic anemias.

Another was that the spleen in some way elaborated toxin and caused blood destruction. Suddenly with the advent of liver feeding, our whole ideas on the subject of chronic pernicious anemia were revolutionized when it became evident that one of the chief difficulties was the lack of red blood cells in the bone marrow and this process could be smoothed out by feeding liver or liver extract.

It seems to me that still leaves us up in the air for an explanation of the hemolysis and that isn't such a striking feature in chronic pernicious anemia as in the acute anemia of pregnancy. I have the feeling by the study of the acute anemia of pregnancy we will learn something about chronic pernicious anemia. Clinically the pictures can be differentiated and are not the same. I think at the present time we should not call hemolytic anemia of pregnancy chronic pernicious anemia.

All the same, they may be the same process when we find out what it is for the simple reason that there are some very queer things about the way acute anemia of pregnancy behaves. Apparently it responds to liver feeding in the same way that chronic pernicious anemia responds. As reported by Dr. Kinlaw this morning, feeding of the liver either before or after delivery, if the patient is not too sick, and has a little time to start blood-making on her own hook, will cure acute hemolytic anemia of pregnancy. So that is a very suggestive factor in comparing those two anemias, chronic pernicious anemia and acute, if both are

cured by the same thing. We are suspicious that they are probably ultimately due to the same cause.

On the other hand, acute pernicious anemia of pregnancy after delivery can be cured by blood transfusion in sufficient amounts. Maybe one transfusion won't cure them, but apparently if you give sufficient amount of blood the cure can be brought about.

There is a very striking thing in that situation in that no amount of transfusion before delivery has the slightest effect on the acute hemolytic anemia of pregnancy. It is perfectly worthless. Why? Nobody knows. So there we are. We have gotten that far with the hemolytic anemias, both acute and chronic, that they are apparently due to some sort of deficiency which is supplied by liver or liver extract.

Of course, we are daily familiar with the secondary anemias that Dr. Nalle has reported on chiefly, in all sorts of diseases, infections, malignancy, malnutrition. We are used to seeing secondary anemia and we just assume whatever is the cause of the disease is also the cause of the anemia, probably without trying to explain to ourselves how an infection should cause secondary anemia or how malignancy should cause secondary anemia.

I think this report on secondary anemia in pregnancy is extremely interesting just as the acute anemia, hemolytic type is, because in these secondary anemias of pregnancy we have no malignancy, no infection, and the assumption is that we either have a toxemia from the pregnancy itself which is not demonstrative, or what seems probably more likely, we again have some sort of deficiency in nutrition, which, instead of giving acute hemolytic anemia has given secondary anemia. (Applause)

Chairman Ross: Is there any other discussion?

Dr. Reid Patterson (Charlotte): I am very much interested in anemias of pregnancy as I have been running a series of cases very similar to Dr. Nalle's. I have found the anemias develop early, at around six weeks to two months, and are at their lowest at about the eight month, probably standing still about the last month of pregnancy. We all know that the regenerative need of woman is rest after delivery, even when she has had a severe hemorrhage.

I have had one particular case that I would like to report, hemoglobin of 47 per cent and red cell count of 3,100,000. This woman was put on liver extract and iron, and in ten days' time her hemoglobin had reached 73 per cent and her red blood count 3,900,000, showing, I think, the addition of iron and liver extract in these severe anemic cases will help nature considerably.

Chairman Ross: Is there any further discussion?

Dr. Cheatham: I should like to ask the doctor if he noticed any relationship between the degree of secondary anemia and toxemia in the cases in the clinic. Were any of those toxic?

Chairman Ross: Dr. Nalle, will you close the discussion?

Dr. Nalle: We had much less toxemia than I had had previously and that is one of the main reasons I felt so encouraged and wanted to report this, how much better the well being of the patient was all the way through, how much less swelling and loss of energy and everything of that sort.

To better answer your question, someone reported, and I don't think I mentioned it, a series of cases in which he watched for that. I forget which one of the authors that I mentioned reported that, but one of those said 10 per cent of those markedly anemic people showed toxemia of pregnancy. It is like a systolic blood pressure. We get the final blood picture. We antedate some of these toxemias very well, just like we can by blood pressure.

I am glad Dr. Allan brought out the point which I tried to make that there is an anemia in pregnancy due to the fetus, the presence of the fetus. As he says, the blood transfusions do not help those pernicious-like cases while pregnant. In other words, as soon as the cause, the fetus, is removed, then the blood transfusions cure them immediately.

So I am going to argue that there is a definite, physiological anemia—I don't know whether we ought to say "physiological" or what, but there is a definite anemia of pregnancy much more constant and serious than I ever dreamed of before I began to look into the matter some years ago.

I thank you, gentlemen, very much. (Applause)

SOME CONSIDERATIONS OF MOVABLE KIDNEY

William M. Coppridge, M.D., F.A.C.S., Durham, N. C.

For several years I have been interested in the fact that abnormal mobility of the kidney is often productive of very serious renal disease. I am convinced that many patients can be spared years of suffering and possibly the loss of a kidney if the condition can be diagnosed early enough and measures taken to correct it. It is not uncommon to hear our best medical men, surgeons and urologists as well, speak lightly of floating kidney in neurotic women and often without any suggestion that the condition should receive serious treatment. I have recently seen two patients with advanced pyelonephritis due to ptosis of the kidney who had been seen by internists of national reputation. Each had been advised that she had a floating kidney but little could be done for it, that surgeons seldom operated for it because the operation was not often successful. Such a position is not tenable in the face of facts based on statistics of those who have operated large series of cases that were selected after careful urological study. It is not my purpose to propose any new form of treatment or to report any lengthy series of cases but simply bring the subject before you for consideration and stress some of the points in diagnosis with especial reference to associated lesions.

The history is well known—the over enthusiasm for nephropexy in the latter decades of the last century due to the writings of Kelley, Edebohls, Spede, Morris and others. Then came the reaction to the operation largely due to the work of Glenard and Israel who contended that nephroptosis was only part of general visceroptosis and condemned the procedure. Since 1900 the general teaching has been that of conservatism which has amounted to neglect in the care of these cases. But at the present time with the methods of accurately studying the mechanics of urinary excretion it is recognized that abnormal mobility of the kidney, even slight, may produce serious obstruction to the flow of urine.

Several excellent contributions to this subject have appeared during the past year. B. A. Thomas (1) who reports in detail seventy-five cases operated, states, "For many years the conviction has become more firmly impressed upon me, as the result of observtaion and experiences that many patients with movable kidneys frequently fail to receive treatment that could save them years of invalidism, destruction of the kidneys or actual loss of life." O'Connor (2) reports thirty cases operated in which twenty-one reported one to eight years later that they were completely well; six reported as having been greatly improved; two somewhat improved and one unimproved. Burford (3) who reported forty-eight cases operated says, "Nephropexy is the only relief for the majority of ptosed kidneys producing urinary obstruction." Mathe (4) stresses the fact that surgical suspension of the kidney has fallen into disrepute not on account of its insufficiency but because it has been performed when not indicated often with faulty technique and because of failure to realize the necessity of exposing the ureter and freeing it from adhesions or bands which continue to cause obstruction.

This subject should be of especial interest to gynecologists since movable kidney is overwhelmingly more common in women. Accurate estimates are hard to arrive at because there are few observers whose patients are not largely of one sex. O'Conner's cases were twenty-nine women and one man. Thomas whose patients are largely men found forty-three women and thirty-two men. The history of trauma or severe strain is found in a large proportion of cases varying from five to twenty per cent. I believe pregnancy plays a large part in the production of movable kidney. The sudden lowering of intra-abdominal pressure with the rapid loss of weight that these women experience greatly predisposes them to this condition. In addition to this, and possibly just as important, is the fact that hydronephrosis exists in a considerable number of women during the latter months of pregnancy. Several weeks or months must elapse before the pelves assume their normal size and often this never occurs. So the kidneys are increased in weight and this tends to promote sagging when the patient assumes the upright position. It seems that obstetricians might well consider this important factor in their post partem treatment, especially since it seems to be the custom nowadays to allow puerperal women out of bed earlier than was formerly the custom. In cases where there has been any evidence of pyelitis (and that usually means hydronephrosis) during pregnancy, the length of stay in bed should be increased, so as to allow the kidneys to become nearer normal before the patient is discharged. Fifty per cent of the cases I have seen date the onset of their symptoms from pregnancy.

Many observers have stressed the importance of associated lesions and their part in the production of ptosis. Years ago Hunner suggested that ureteral stricture by increasing kidney weight through hydronephrosis, was a factor in the production of ptosis. This seems reasonable because ureteral stricture is associated with a good proportion of cases. Ureteral kinks and bands may play a part in the same way, however, it is probable that these are more often a result of the ptosis than a factor in promoting it. I mention these points in an effort to show that simple ptosis is not always the whole story and operation for fixa-

tion without due consideration of the associated lesions will often result in failure.

It is true that some patients with extremely movable kidneys experience no symptoms and may go on for years without drainage being interfered with to any considerable extent. Other cases with first degree mobility producing angulation at the uretero-pelvic junction may suffer great discomfort and show marked pathological changes in the kidney. It is remarkable how many of these persons show gastric and intestinal disturbances. Pain is produced over the renal area or along the ureter and often in the hip and thigh. Intermittent attacks are frequent but the so-called Dietel's crisis has not been common in my experience. The neurosis associated is often the most distressing element. Bladder distress, in the infected cases, together with the renal pain going on for years can easily explain why these patients become neurotic.

The pathology produced by ptosis and its associated lesions impresses upon us the importance of early recognition and treatment. That this has been recognized is evidenced by the fact that in the collected papers from the Mayo Clinic from 1884 to 1929 (5) there is not a single indexed reference to the subject. Hinman (6) in one hundred and five cases of hydronephrosis found evidence of nephroptosis in ninety. Infection almost invariably follows stasis so it is found that a large proportion show varying degrees of infection from a mild pyelitis to the end result of pyonephrosis or death of the kidney. Stone formation is favored and possibly also tumor. The condition is progressive, the more hydronephrosis the greater the sagging so a vicious circle results, even years may be consumed in the process. During this time the infection may produce rather pronounced systemic results. So in a study of movable kidney one must realize that nephropexy is only one operation for this condition and applicable only to early cases. In the late cases plastic operations on the ureter and pelvis for the relief of hydronephrosis may be indicated. Quinby (7), Hinman ((6), and Walters (8) have contributed notably to this work. Professor Alexander Von Lichtenburg (9) on a visit to this country last year described many ingenious procedures for relief of impaired renal drainage. The pathology produced is varied and depends on the degree of hydronephrosis and infection.

Since I became interested in this subject, several years ago, I have tried to follow a routine in examining all cases of chronic renal pain in an effort to find out whether or not movable kidney plays a part in production of the symptoms. Physical examination often establishes the fact that the kidney is ptosed but only pyelography can give a true picture of the extent and whether or not ureteral drainage is impaired. Our procedure is as follows: The patient is cystoscoped on a urological table which allows the Trendelenburg position and also the reversed or sitting posture. After securing urine specimens and cultures, a straight X-ray plate is made. This is done for evidence of stone. Then a pyelogram is made in the supine position and immediately afterwards the table is reversed, the catheter slightly withdrawn and another pyelogram made in the sitting position. The patient is asked to cough several times before the last plate is made so as to cause the kidney to move

downwards as far as it will. Study of these plates gives a fairly accurate idea of degree of mobility, whether or not angulation of the ureter occurs and whether or not there is an associated stricture of the ureter. In certain cases it is of value to study the emptying time of the pelvis. Goldstein (10) has shown the value of this. The normal emptying of the pelvis is from six to eight minutes. In some of these ptosed kidneys the iodide may be retained as long as thirty to sixty minutes.

Once a definite diagnosis is established and it is shown that urinary drainage is interfered with, some form of rational treatment should be instituted. If the retention is slight or even fairly pronounced, with no infection present and symptoms not severe, palliative measures, such as an abdominal binder, forced feeding and increased rest should be tried. Where there is evidence of ureteral stricture this should always be treated before any operative procedure is carried out. Where ureteral blocking is definitely shown and retention of urine evident together with infection, operation is indicated with the idea of exploring the pelvis of the kidney and ureter as well as fixation of the kidney. The fact that a neurosis exists is no contraindication for operation if the pathology can be demonstrated. I do not want to be misunderstood and leave the impression that I recommend fixation of kidneys without due study and consideration. In fact our records show that we have seen forty-two ptosed kidneys of sufficient extent to be classified as such and we have done nephropexy on only fourteen of them. Several are still under observation and may require operation. It is remarkable how far prejudice will carry us in the wrong direction. Because it was found a number of years ago that surgeons were operating on too many ptosed kidneys we find surgeons and urologists today who refuse to consider operation in almost any type of nephroptosis. They do not consider that thirty years ago there were no means of accurately studying these cases. Without cystoscopy and urography the diagnosis was necessarily a hit or miss affair without any knowledge of the mechanical factors. Possibly fifty per cent of the cases operated should not have been operated at all and likely fifty per cent of the remaining cases had associated lesions which when unrecognized rendered the operation useless.

The surgical problem in these cases is to replace the kidney in the proper position so it will remain there and to make sure that all mechanical interference with the ureter and pelvis is corrected. When the kidney slips down and produces angulation of the ureter by some fibrous band, definite adhesions may take place at this point and unless it is released it may continue to exert an obstructive influence after the kidney is replaced. Therefore, in performing nephropexy the pelvis and ureter should be well explored. Abnormal blood vessels to the lower pole may continue to obstruct after the fixation. Simple section with ligation will relieve the condition.

The actual technique of the operation as usually carried out consists of denuding the posterior surface of the kidney of a considerable portion of its capsule and then with mattress sutures through the capsule fix the kidney firmly to the muscles of the back. For this purpose I employ chromic catgut and use from three to five sutures. The upper

suture passes over the twelfth rib. It is important that no fat remains between the surface of the kidney and the lumbar muscles, because the formation of adhesions may be thus interfered with. The fatty capsule is then sutured to the muscles below the kidney forming a support for the lower pole of the kidney. This method has given us good results. Rest in bed for three weeks following the operation is advisable.

The general idea that these kidneys do not remain fixed is erroneous. Riley (11) reports thirty-five cases operated after careful study. All were relieved of symptoms and studies carried out six to twelve months after operation showed the kidneys in good position. Thomas, Burford and O'Conner all report success in large series of cases. Of the fourteen cases I have operated, thirteen have been relieved and subsequent studies showed the kidney in good position. The one failure was in a woman who was forced to resume work too early and examination six months later showed the kidney had slipped down into its original position. I believe the percentage of good results from this operation, when properly carried out, is equal to that of most operations more commonly performed.

The importance of movable kidney with its serious sequellae is not sufficiently impressed upon the profession. In properly selected cases, nephropexy, with exploration of the pelvis and ureter will result in cure. The operation is safe and efficient and deserves more recognition from the profession.

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DISCUSSION

Chairman Ross: The discussion will be opened by Dr. Robert McKay of Charlotte.

Dr. Robert McK: I think Dr. Coppridge's paper is very well timed. After the work of Kelly who demonstrated the movability of the kidney and symptoms, like all swings of the pendulum in medicine, there was a great deluge of people doing nephropexy. If a woman had a kidney that had anything at all the matter with it, that kidney was fixed. Little by little the operation came into great disrepute, and finally the man who suspended a kidney was placed in the same category as the man who did some of the more radical of the procedures in surgery.

However, as he has very beautifully demonstrated, nephropexy does have a place in surgery in the selected cases where the drainage of the kidney is interfered with by its position, and the kidney is dem-

onstrated by pyelography to be movable, there is a distinct field for nephropexy. It consists of demonstrating that the pelvis in the kidney does not drain properly. Most of the radiographic tables now upon which pyelography is done are so constructed that you can take a prone pyelogram and then sit the patient up and have him cough. If the kidney bends down into the pelvis the patient will complain of pain. That is the answer to the question. Very special care should be taken in those cases where there is a band of pressure over the upper third of the ureter or the ureter and pelvis juncture so when the pelvis descends and becomes lower than the point where the urine comes out of the pelvis, you will find the beginning of hydronephrosis. Those cases do very well when you improve the drainage by nephropexy.

There is one condition you should be on your guard against in doing nephropexy, and that is the ectopic kidney. You willtake the pyelogram on the kidney back of the rectum and say the patient has a nephroptatic kidney and you will suspend that kidney. If the pelvis points inward instead of outward, there is a congenital defect.

If, due to an anomalous blood supply the ascent is arrested and the kidney remains in the pelvis, you have an ectopic kidney and you cannot suspend that kidney. Terrible results have been obtained in trying to suspend ectopic kidneys.

Coffee, about three years ago, wrote a monograph on gastronephritis and in that he made the claim that the nephroptatic kidney rests on a narrow shelf and the colon descends, there the band of peritoneum attached to the kidney will pull the kidney out of position.

As to the technique of suspending the kidney, you should be very careful those bands are free and you should free the ureter down as far as you can. Some men take sutures through the kidney. The functional test on any kidney that has had a mattress suture pass through it, will show the function diminished. You should slit the true capsule, loop the suture through it and I prefer taking one stitch over the lower rib and attaching the kidney to the quadratus lumborum muscle. It is very important that you strip off the capsule to get the adherent effect of the raw kidney to the raw muscle. You should be very careful to clean all the yellow fat under the capsule away from the kidney pelvis so as to allow adhesions to take place.

I think the paper was very timely and in those cases in which it is applicable you will get results. I think we are beginning to look a little less askance at the man who suspends a kidney that should be suspended.

Chairman Ross: The last paper will be "Endrocines in Gynecology and Obstetrics," by Dr. Adlai S. Oliver of Raleigh.

ENDOCRINES IN GYNECOLOGY AND OBSTETRICS

Dr. Adlai S. Oliver, Raleigh

In presenting a paper on this subject I would have you keep clearly in mind that we are striving to confine our discussion to proven facts and generally accepted theory, based on probable fact. Further, the scope of this paper allows of only a superficial survey of the subject. In no field of medicine is there so much misunderstanding and misinformation. Nowhere has so much unnecessary, at times contraindicated

medication been given; shot gun, hit or miss effort given with a hope and a prayer. This type of application is naturally hopeless and often disastrous. No less unfortunate is the individual, who because of gross and grave abuse of a useful field, with marvelous possibilities when properly applied, unreasonably condemns the whole thing.

This presentation is intended to show the correlation of the various glands of internal secretion concerned with female individual from the developmental period through the menopause. There are many phases not touched upon, but it is my opinion that when we can come to think along this subject constantly keeping in mind this interrelationship, that our observations so vitally important in making progress toward an understanding of the subject will be greatly enhanced. We can then work out our own problems, determine our own best therapeutic procedure, based on a study of each individual case coming under our treatment.

In the developmental period of childhood and adolescence the glands of internal secretion particularly involved are the thyroid, the pituitary and the thymus. In childhood, the thyroid is probably the most important. Its influence in development is too well known to be discussed here. Suffice it to say that failure to develop through deficient thyroid activity is the result of consequent poor metabolism. All of us are familiar with the various degrees of thyroid deficiency, ranging from Mongolian idiocy and Cretanism to the milder types manifested in a tendency to obesity and sluggishness; the constipated, pasty, mentally dull and physically lazy individuals. All symptoms are referable to a lowered metabolic rate and the consequent nutritional disturbance. They are in direct proportion to the degree of the deficiency. The degree of deficiency or activity can be accurately measured by metabolic tests. Normally puberty is established between the ages of 11 and 14 years. But its normal establishment is dependent on a balance or equilibrium between the above named glands. The pituitary has two distinct harmones, the pressor activity represented by a secretion from the posterior pituitary which activates unstriped muscle. The secretion particularly important in skeletal development, however, is from the anterior pituitary. Before adolescence is complete an overactivity of the anterior pituitary produces giantism—after adolescence the same overactivity produces acromegaly. Apparently it is natural for males to exhibit a mild degree of acromegaly, broad facial bones, prominent brows, etc. Pituitary giants are distinguished by their large bones, broad features, normal or thick skins, a profuse body hair growth and marked sexual and physical development. Underactivity of the anterior pituitary produces dwarfism, undersexual development as well as underphysical development. Pituitary activity differs in the female from that in the male, particularly marked in the female pelvis. It is thought that even in the developmental period before the known activity of the sex harmones have begun to function that the ovary in the female and the testes in the male have a stimulating or inhibitory action on the pituitary. Certain it is that the weak or absence of ovarian influence on the pituitary will cause or allow a development of the male type of pelvis with other masculine characteristics. The thymus is believed

to enter into this by holding in abeyance certain ovarian functions until such time as the skeletal and pelvic organs developments are about complete. Normally this thymic influence is withdrawn at puberty and ovulation and menstruation are established. Its persistence after puberty will produce the thymic type of giantism, tall, slender, fair complected, thin skinned, non-resisting, individuals of an artistic temperament. Their front teeth are widely spaced. They react badly to pain and worry, adjust themselves poorly to the problems of life, and lose their artistic leanings when they lose their cracked voices when their late adolescence has come to an end. When the thymic influence is withdrawn too soon it will cause or allow precocious menstruation, too early puberty, etc. Where it is suddenly withdrawn ovarian hyper-activity manifests itself by excessive bleeding at the beginning of menstruation. Bearing in mind the necessity for equilibrium between the thyroid, the pituitary, the ovaries and the thymus, it becomes obvious from the foregoing résumé that failure to menstruate, whether it be delayed menstruation or amenorrhoae may be due to many endocrine causes. First of all, it may be due to a prolongation of the thymic influence beyond the period of puberty, and this in turn may be due to a persistent thymus or to poor ovarian activity, too weak to overcome slight remaining thymic activity. Again, as was previously pointed out, weakness or absence of the ovarian influence on the pituitary will cause or allow development of the so-called pituitary or male type of female. These are easily recognized by their large skeletal development, male type of pelvis, mannish features and male distribution of body hair growth. These individuals menstruate late, not unusual for the establishment to occur at from 17 to 22 years of age. In thyroid deficiency, it is natural that the ovaries and other pelvic organ development should be deficient, and therefore that menstruation should be deficient or irregular in appearance. It is a matter of common observation that when the anterior pituitary is overactive the posterior pituitary is underactive, with a consequent underactivity in unstriped muscle, including uterine. It then follows naturally that the smaller the skeletal development the earlier menses are established, the greater tendency to spasmodic dysmenorrhoea and the quicker and easier the labors, because of a fine development of the pelvis and activity of the uterine musculature. Conversely, the larger the skeletal development, the later establishment of menstruation, the poorer pelvic development and the greater tendency to primary uterine inertia. This indication enough of the importance of careful pelvic measurement in every woman whose menses were established late.

The ovarian influence in addition to being held in check, balanced or opposed by thymic and pituitary activity, the ovarian activity seems definitely to be dependent on stimulation from some as yet unknown influence or stimulation in the uterine endometrium. Obese women menstruating less and less come in who have finally been curetted and cease altogether. This is forcibly and at times tragically shown by the immediate menopausal symptoms following complete hysterectomy. There is a consequent degeneration or atrophy of the ovaries, which can be definitely avoided if even a small amount of endometrial tissue is left at the operation. It is possible then that in infantile uterii with

poor endometrial development that failure to menstruate is due to deficient stimulation from this endometrial influence. On the other hand, we must take into consideration the cause of infantile uterus. Certain it is that pituitary activity, held in check by ovarian activity has largely to do with pelvic organ development. A certain biological laboratory claims to have separated two distinct harmones from the ovary. One called Sistomensin, they claim is inhibiting to both the development of the secondary sex characteristics and to menstruation. The other called Agomensin is supposedly stimulating to ovulation and menstruation, to the development of sex organs and characteristics. Both of these are claimed for the corpus lutea. It is possible that there is an interdependent action between the ovarian harmone and the endometrium which makes a viscous circle possible.

Veterinary surgeons have contributed the information that persistent corpus lutea cysts prevent conception. So that in addition, to preventing abortion by follicular development following pregnancy (this is the function of the corpus lutea) and therefore menstruation, its presence would naturally prevent preparation for menstruation and may be one of the causes for amenorrhoea in women who have previously borne children. Obviously, it could not cause primary amenorrhoea and primary sterility, since it does not develop until conception has taken place.

Most of us are now familiar with the work of Allen and Dosey, of Frank, Ascheim Zondek and others in isolating and standardizing what has been termed F. S. H. Definite dosage in Rat Units have been worked out, a Rat Unit being that amount of the isolated harmone which will produce esterus in a spayed white rat. It is elaborated by the ovarian follicle, the corpus luteum and the placenta. It has been isolated from the circulating blood, the urine, bile, uterine blood at menstruation from the feces, the placenta and the umbilical cord blood. The amount differs greatly at different periods or cycles of the menses. It is absent during the resting stage, reaches its greatest amount at the beginning of menstruation and drops sharply to negative during the first menstrual day. Its presence in the urine makes the pregnancy test possible. Remembering that it is absent in the resting stage, and that early in pregnancy it is moderately present, urine from a woman who has ceased to menstruate because of pregnancy, when injected into white mice will cause them to menstruate, but if pregnancy is not present urine from the patient injected into mice will cause no esterus. This presence of F. S. H. in the pregnant woman gradually fades until at the end of the second month it is negligible in amount, finally disappearing altogether. It reappears at the sixth month until term when it is present in abundance. This clearly indicates that the placenta manufactures F. S. H. during pregnancy and is probably responsible for the rapid development of female sex organs during the latter months of pregnancy, and the interesting retrogression of the male sex organs during the same period. Franks latest report has to do with a possible renal threshold for F. S. H.

Finally, it is common knowledge that nursing mothers usually do not menstruate. It is not established that there is an endocrine action in the mammary glands. It is established that nursing at the breasts

stimulates involution of the uterus and other pelvic organs following delivery. It is also established that cessation of the mammary function allows immediate resumption of menstruation. This clearly indicates an influence of the mamma over ovarian activity that must be accounted for. In this connection, it is interesting to note that placental secretion is supposed to stimulate the growth or development of the mammae, but actually to inhibit milk production. Milk will not appear in the breasts of women carrying dead fetuses or in retained placenta until their expulsion.

There is a type of irregular bleeding in women who previously have had hypofunctioning ovaries with relative amenorrhoea, thought to be due to a disfunctioning of the ovaries rather than to hyperfunctioning, since giving of good whole ovary clinically relieves the condition.

Nearly every patient which will consult you will fall into one or the other of two groups—either a Hypo-Type or Hyper-Type. Hypo-Type:

(1) Tendency to obesity. (2) Relative amenorrhoea. (3) May or may not be sterility. (4) Hypoplasia of the genitalia. (5) Symptoms that suggest myxedema. (6) High sugar tolerance. (7) 2 and 3 are due to the ovary or ovarian weakness, 4 to pituitary weakness, 5 to thyroid deficiency and 1 and 6 to combinations.

Reversing the above, Hyper-Type.

Leanness, menorrhagia, dysmenorrhoea, fertility, hyperplasia of the genitalia, repeated miscarriages and evidence of hyperthyroid activity.

Treating this type is more difficult than the first. Thymus opposes ovarian, the ovary and corpus lutea oppose the pituitary, but no gland has been found to oppose the thyroid.

MENOPAUSAL DISTURBANCES

Flushes and flashes are due directly or indirectly to ovarian deficiency. Since these are symptoms of abnormal adrenal action, whose consequent abnormal action is directly responsible for the symptoms, it follows that in some unknown way the ovarian deficiency at this period disturbs normal adrenal balance. Where the symptoms are unyielding to ovarian therapy, benefit may be derived by giving adrenal gland in addition.

Amenorrhoea is the most common symptom, but it is unusual for this to occur suddenly. Headache may be due to elevation in B. P. or to pituitary disturbance. Knowing that the corpus lutea is the natural combatant of pituitary action and that elevation of B. P. at the menopause when functional in type yields readily to corpus luteal injections, it is natural to conclude that overactivity of the pituitary probably combined with abnormal action of the adrenals is responsible for this elevation. There is a type of pituitary headache, due to pituitary deficiency which occurs during menstruation or just following menstruation. It may also occur as an incident to the menopause. It is characterized by periodicity and pathologic drowsiness. It is readily relieved by pituitary feeding. Remembering that the thyroid, the pituitary and the ovaries are so chained together as to augment, stimulate or counterbalance each other, it is reasonable to suppose that it is essentially necessary that there be represented in the circulating blood unknown but adequate quantities or proportions of all three. Otherwise

in the absence or of the deficiency of one or two, the other one or two left circulating in the blood will appear to, and maybe will, hypersecrete. If the ovarian influence is withdrawn too rapidly, its counterbalance of the pituitary may cause that gland to become hyperactive, causing gastrointestinal crises, i. e., spasms of unstriped muscle, crampy, severe pains, and often diarrhoea. The nervous disturbances associated with the menopause are supposedly due to overaction on the part of the thyroid, and the tendency to obesity sometimes coming on at the same time, associated with myxodema to thyroid deficiency. The mental disturbance is thought to be due to a combination. Why the menorrhagia or metorrhagia in the absence of organic causes? If these three endocrine constituents diminish in activity in proportion and at an even rate no untoward symptoms occur. If the pituitary and thyroid influence is withdrawn earlier than is the ovarian, excessive bleeding is natural. The opposite situation should cause an early cessation. There is the type of hyperplasia of the endometrium with excessive bleeding which is apt to appear at adolescence or at the menopause, but its cause is not understood. And there is the functional type of bleeding due to general fibrosis of the uterine musculature, the endometrium degenerating and shedding off. The uterus here is small and hard, bleeding almost constantly, and on curettage for diagnosis the hardness and resistance, the absence of scrapings, etc., are striking. Urge the importance of diagnostic curettage in all irregular bleeding past 35.

SECTION ON SURGERY

Dr. Albert W. James, Monroe, *Chairman*

The Section on Surgery met in the ladies' card room of the Carolina Hotel at 2:15 P. M., Wednesday, April 30, 1930, and was called to order by the Chairman, Dr. Albert W. James, of Monroe.

Chairman: The first paper on the program is by Dr. R. L. Pittman, Fayetteville. Dr. Pittman.

THE DIAGNOSIS AND SURGICAL MANAGEMENT OF TRAUMATIC RUPTURE AND PUNCTURED WOUNDS OF THE URINARY BLADDER

R. L. Pittman, M.D., Pittman Hospital, Fayetteville, N. C.

In considering traumatic wounds of the bladder the two most common types are ruptured and punctured wounds. The symptoms, diagnosis and treatment are practically the same in both, differing only in the location and extent of the wounds, therefore, in speaking of ruptured bladder the same will apply to that of punctured wounds, by bullets, fragments of bones, etc.

There is very little accurate information concerning the occurrence of ruptures of the bladder and until the advent of the automobile rupture of the bladder occurred about as often as rupture of the other abdominal organs, the protection afforded by the pelvic bones being offset by the greater liability to over distention.

Statistics show that injuries of the bladder are occurring with increasing frequency each year due to the increasing number of automobile accidents. Illustrative of this is the following report from Bellevue Hospital, New York City. In fourteen years ending March, 1929, 300,000 patients were admitted, 55 of which were ruptured bladder and 25 of these occurred in 166 cases of fractured pelvis. This averaged one case of ruptured bladder to every 5,500 patients. In Fayetteville, N. C., a town of 14,000 people, where I practice, in the admission of 15,000 patients over a period of ten years we have had 6 patients with rupture of the bladder and 2 bullet wounds, 3 of these ruptures occurred in fracture of the pelvis. This is a ratio of 1 to every 2,000 patients.

Types of Rupture: Rupture of the bladder may be divided into two distinct types. Intra-Peritoneal and Extra-Peritoneal.

Causes: Pre-disposing Causes: Over distention of the bladder and alcoholism.

Exciting Causes: Injuries to the pelvis or lower abdomen by direct violence.

Symptoms: Symptoms depend largely upon the location of the rupture. If the rupture is intra-peritoneal the symptoms are those of internal hemorrhage, shock, constant desire to urinate with development of symptoms of peritonitis caused by extravasation of urine into the ab-

dominal cavity. If the rupture is extra-peritoneal the symptoms are the same except those referable to peritonitis, which are lacking. The pain in extra-peritoneal rupture is usually very severe and sudden in onset immediately following the injury, is located over the region of the bladder, radiating down into the perineum, groins and penis and can be relieved only by operation or the administration of opiates. In intra-peritoneal rupture pain assumes the nature of pain of peritonitis.

Signs: In extra-peritoneal rupture there is marked muscular spasm with pain and tenderness on slight pressure over the region of the bladder, also extravasation and tumefaction into the overlying tissues. If the rupture occurs posteriorly or laterally below the peritoneal attachment marked extravasation of the urine may occur high up on the posterior abdominal wall, the perineum, the region of the rectum and up the anterior abdominal wall as high as the umbilicus or as low as the groin on either side.

In intra-peritoneal rupture the urine collects in the abdominal cavity, therefore, extravasation of the urine into the tissues of the perineum does not occur but is soon followed by signs and symptoms of peritonitis. The patient has a constant desire to urinate but is unable to void more than a few drops which always contains blood. This is verified by the passing of a catheter into the bladder with the removal of a small quantity of bloody urine.

Considerable information can be obtained by instilling a quantity of fluid into the bladder which has been accurately measured and compared with the diminished quantity removed by the same process. This test may not always give positive evidence as the quantity removed may not be a true index to the condition of the bladder, however, the removal of a small quantity of bloody urine through the catheter should always be considered positive evidence of rupture of the bladder when a patient is unable to void following injury in this region.

Diagnosis: The condition is strongly suggested by a syndrome including shock, signs of internal hemorrhage, dysuria, haematuria absolute inability to urinate, and tenderness in the region of the bladder. It is suggested also when, on catheterization, a small amount of bloody urine is withdrawn or far more urine is obtained than was anticipated (drainage of the abdomen filled with urine).

Complications: The immediate complications are shock and internal hemorrhage. The more remote complications are peritonitis, sepsis, fracture of the pelvis and urinary fistula.

Treatment: First the shock from the injury or hemorrhage should be overcome by the usual treatment, this being accomplished immediate operation is imperative and consists of closing the wound in part or as a whole depending upon its location also ample drainage of the bladder, peritoneal cavity if necessary and of the tissues into which the urine has extravasated.

Mortality: This is in direct proportion to the time elapsing between the rupture and the operation for closing the bladder wound. Ninety per cent of the cases operated on within the first twenty-four hours recover. Sixty-five per cent of those operated on within the second

twenty-four hours recover. The mortality increasing rapidly beyond this period if operation is delayed.

In our series of 6 ruptures and 2 bullet wounds all of which were operated upon within twenty-four hours 7 recovered. One bullet wound died from hemorrhage due to injury of one of the larger blood vessels in the pelvic cavity.

DISCUSSION

Dr. Robert W. McKay (Charlotte): I was very much interested in Dr. Pittman's paper. Of course, we have a much greater number of ruptures of the bladder than formerly, on account of automobile accidents, as he brought out.

Rupture of the bladder is a very difficult thing, unless the bladder is distended. Fracture of the pelvis does not usually cause rupture of the bladder. Any patient, however, that is thrown out, especially prone on the highway, with the history of not having voided for a long time before, should be suspected of rupture of the bladder.

As to the diagnosis of rupture of the bladder, two methods are usually employed. One is to catheterize the fluid injected—inject a certain amount of fluid and then try to withdraw the same amount of fluid. As Dr. Pittman brought out, catheterization carries with it great danger in that you may carry infected fluid either into the peritoneal cavity or into the tissues surrounding the bladder. A better method is to inject air, and with the fluroscope you can see air either in the tissues or in the peritoneal cavity.

In regard to the treatment of rupture of the bladder, Dr. Pittman brought out one point which I think should be emphasized above all others, and that is the necessity of immediate operation. I had the pleasure of looking up the subject once and collected 86 cases. Out of those cases, among those who were operated upon in the first twelve hours 8 per cent mortality occurred; among those operated upon in the second twelve hours the mortality increased to 50 per cent; among those operated upon the third day it increased to 70 per cent. I think it is preferable to open the peritoneal cavity first, then by pressing down upon the bladder you can determine where the leakage is coming from. I believe in closing off the peritoneum, if it is a peritoneal rupture, and then closing the hole, the same as you do in suprapubic cystotomy. The wider drainage you can give, the better your result is going to be. I have seen men close ruptured bladders tightly, without giving drainage, with very severe extravasation into the peritoneum.

In a pathological bladder, from tuberculosis, infiltrating carcinoma of the wall, or deep ulcer, it is not a difficult thing to rupture that bladder if the bladder is contracted down and you attempt to force an instrument into the bladder. It is therefore very advisable to have the bladder distended to its fullest capacity. In all cases where the bladder is ruptured in cystoscopy there is profound shock; the shock is very great, and you have no difficulty in recognizing it. It is up to you to do something right then and there, because the longer you wait the worse it is going to be.

Dr. Foy Roberson (Durham): This paper of Dr. Pittman's is interesting and I think very appropriate at this time, as Dr. McKay has

said, on account of the numerous automobile injuries we all see nowadays. So many ruptures occur not only of the bladder but ruptures of other abdominal viscera.

These gentlemen have covered the points of diagnosis and treatment of rupture of the bladder. It is surprising how often there is a rupture in automobile accidents when the skin is not broken and one would not expect internal injury or rupture. Recently I saw a boy who was in an automobile accident and saw him very shortly after the accident occurred. He was not in shock. He complained of some pain in the left lower quadrant. The abdomen was fairly rigid, not especially so. We catheterized him, and the urine was not bloody; then we injected some boric solution into him, and it all returned. We came to the conclusion that the bladder was not ruptured, but he had no peristalsis. I think that is very important, because I think in any rupture you get cessation of peristalsis practically immediately. Dependent upon the amount of time that has elapsed since the time of the injury you get rigidity. This boy, however, had practically no rigidity. We thought, however, since he had no peristalsis it would be better to operate and see if he had a ruptured viscus of any sort, going on the theory these gentlemen have brought out that early operation is a good thing. He had a ruptured small intestine, with free fluid and some intestinal contents in the abdomen. We found a hole about the size of one's thumb, which was closed; and he made a good recovery. I think we should remember that we are likely to get ruptured bladder or ruptured intestine in an automobile accident that you would hardly expect from the symptoms that show outside.

Dr. J. P. Kennedy (Charlotte): There is one point I should like to call attention to, and that is that obtaining clear urine through a catheter does not mean that the bladder is not ruptured. I remember a case a few years ago of a man who had a tree fall across his pelvis, causing fracture of the pelvis. When admitted to the hospital he was catheterized and eight ounces of clear urine obtained. Our conclusion was that the bladder was not ruptured, but the next day he showed signs very suggestive of rupture of the bladder. He was then opened up and a rupture of the bladder found, but in a few days he died of peritonitis. In all probability, if he had been operated upon right away he would be living. So the mere fact that you get clear urine from the bladder does not mean that the bladder is not ruptured.

Dr. T. M. Green (Wilmington): There are several points I should like to stress on this subject that Dr. Pittman has just brought before us. One is that it is very difficult to make a diagnosis of rupture of the bladder. Indeed, as Dr. Kennedy just said, obtaining clear urine does not necessarily eliminate it; on the other hand, obtaining bloody urine does not necessarily indicate it; that may be due to a renal lesion or to contusion of the bladder. Visual instruments are practically barred, because if we can not distend the bladder we can not use them. After all, we are often condemned to do an exploratory operation.

There is one point that has not been brought out, and that is the question of perforation of the bladder. Usually bullet wounds of the bladder are of two kinds, usually an intraperitoneal wound associated

with an extraperitoneal wound. Bullets or foreign substances left in the bladder wall usually ulcerate into the bladder and often ——— into the peritoneum. Many authorities do not catheterize or inject the bladder as a matter of diagnosis, for fear of making the condition worse; at least, they delay that until they are ready to operate or do an exploratory operation.

If a bullet or other foreign substance gets into the bladder and stays there, it may become the nidus of a stone.

Unquestionably we shall have more of these cases of ruptured bladder with our good roads and automobiles.

Dr. Pittman (closing the discussion): It is not always severe injuries that lead to rupture of the bladder. One of this series was caused by a man's falling over a little gutter he had to lead water away from his pump and hitting himself against a stump.

In the text books the statement is made that diagnosis is made at operation or at autopsy. I think it is not so difficult if you go into the history sufficiently with the patient who has been injured and get a history of abdominal injury, the patient unable to urinate though with a constant desire to void, and pain on the use of a catheter; I think you are justified in advising an exploratory operation, at least. Procrastination in these cases may cause death, as in Dr. Kennedy's case. One symptom we have depended on is that the patient is unable to urinate although he has a constant desire to void. With a history of injury in the region of the pelvis, that is very suggestive.

THE CHOICE OF AN ANESTHETIC

F. Webb Griffith, A.M., M.D., Asheville

In this paper today I shall make no attempt to give elaborate statistics or even to cite a large number of case histories to prove any point. But what I shall say is largely my personal opinion of the various anesthetics, formed from an experience of approximately twenty-five years. It is addressed not to the specialist in some limited field who may desire a particular anesthetic because of conditions peculiar to his specialty, nor is it directed to the occasional operator who does not have sufficient clinical material with which to develop a working knowledge of the various anesthetics. It is intended rather for that great group of average surgeons who, like myself, wish to keep abreast of the times and desire to give their patients the best that is practical under the conditions in which the work has to be done. The average surgeon should not be radical and try every suggestion or innovation merely because it is being tested in some large clinic. On the other hand, when any new therapeutic measure has been proven to be of value he owes it to himself and his patients not to be ultra-conservative.

Before the advent of ethylene, the surgeon could only to a limited degree, choose an anesthetic suitable to the needs of his patient. Chloroform had been almost discarded. If complete and thorough relaxation were desired, it practically meant giving ether. Nitrous oxide, while a fair substitute for ether for surface work, did not give the

desired relaxation for difficult intra-abdominal surgery. The field of local anesthesia has been gradually extended but still leaves much to be desired. The introduction of ethylene gave promise of fulfilling a great need. It had the advantages of nitrous oxide in that the induction of anesthesia was short and without the feeling of suffocation or the excitement stage of ether. The relaxation under ethylene was far superior to nitrous oxide and so nearly approached that of ether as to be sufficient for almost any abdominal work. The recovery from ethylene was rapid and with little or none of the unpleasant effects of ether. It looked as if ethylene were going to be the anesthetic of choice in most operations. However, true to the reputation of its natal city, its explosive tendency would at unexpected times manifest itself. Whenever it was used there lurked at the back of the minds of the surgeon and the anesthetist, the possibility that such a catastrophe might happen. Elaborate precautions have been advised to overcome the danger of explosion and many feel that if these precautions are adhered to rigidly, that danger is practically eliminated.

H. B. Williams of the Department of Physiology, Columbia University, in a recent article in the Journal A. M. A. stated, "The total number of ethylene fatalities has not been large. Were there no remedy it might even seem proper to continue its use in the manner and with the equipment hitherto employed. The number of deaths from post-operative pneumonia makes a much more impressive total than do those from ethylene, though death from the latter cause seems more terrible and unnecessary. Also it appears that a great deal may be done to diminish the hazard and, until all has been done which seems reasonably possible and likely to be effective, no careful surgeon will care to face the responsibility for a fatal explosion. It appears, moreover, that many surgeons and many hospitals are living in a sense of false security because of various expedients which they have adopted—expedients to which they are quite ready to attribute their immunity from explosion so long as nothing untoward occurs. Many of these expedients can be shown on physical grounds to be actually ineffective and some likely to increase the risk. The temporary immunity from explosions is a matter of chance and is easily understood when one considers the small number of accidents that have occurred in relation to the total number of anesthesias with this gas. Some explosions have occurred when certain of these "precautionary measures" have been in force. Among the suggested precautions is "earthing various parts of the equipments." This will not be effective so long as the rubber tubing, rebreathing bag and face piece as at present constructed remain in use.

One of the advantages claimed for ethylene is the rapidity of induction of anesthesia, but in that rapidity of action lies also a great danger. We realize the anesthetist should, with every anesthesia, give his complete and undivided attention to the administration of the anesthetic, but he is human and at times his attention will be distracted. The margin beween safe anesthesia and impending death is so narrow that it can be bridged in a few seconds. Recently, while everything was going smoothly, another surgeon walked into the operating room and spoke to the anesthetist in regard to an operation which was to follow.

In a space of time that most of us felt was not over a minute, the patient stopped breathing and showed as deep a cyanosis as I have ever seen. After ten minutes of vigorous work he cleared up and we were able to finish the operation. I therefore feel that anesthetic which is so "quick on the trigger" and which carries with it the constant fear of explosion, is not safe for routine use.

In 1885 Corning published in the *New York Medical Journal*, an article entitled "Spinal anesthesia and local medication of the cord." After experimenting upon frogs and dogs he then, in 1888, published a report of the injection of cocaine hydrochlorate. In 1899 Bier of Kiel, and Tuffier of France, attempted to popularize spinal anesthesia in surgery. In 1899 Tait and Caglieri were apparently the first to operate under spinal anesthesia in this country. They did an ostectomy of the tibia. About 1905 Babcock of Philadelphia began the use of this method, and despite the many failures and discouraging outlook, he persisted and has done as much as any one to develop and improve the technic.

. I had the pleasure of seeing Dr. Babcock attempt to demonstrate his method on two gynecological cases in 1907, but in neither instance was he able to secure sufficient anesthesia to permit operation.

It is only within the past three years that spinal anesthesia has been placed upon a sufficiently rational basis to be reasonably safe for the average surgeon. Credit for this is due of course to many men, but largely to Pitkin of New Jersey. The current literature contains so much about this anesthetic that I will not bore you with an elaborate description but merely give a brief summary of the opinions generally accepted.

The drug most frequently used is either pure novocaine (neocaine of the French) or the preparation prepared by Pitkin called spinocain. Spinocain is lighter than spinal fluid and therefore should never be given with the patient sitting up. Feeling that a surgeon should select one of the preparations and stick to it, my personal experience has been entirely with neocaine. The preliminary preparation is the same as for a general anesthetic, except that, if so desired, nourishment may be taken within an hour or two of the operation. Pantopon gr. 1/3, or Morphia gr. 1/4, is given one hour before operation. The patient is brought into the operating room with the eyes covered and with cotton in the ears. With the patient in the horizontal position a lumbar puncture is done. It does not make a tremendous difference which lumbar interspace is used, but usually the higher the desired anesthesia the higher the interspace chosen. Approximately one centigram of the pure crystal is given for each fifteen pounds of body weight, not to exceed fifteen centigrams. Personally, I have never used over twelve centigrams. About 2 cc. of spinal fluid is allowed to drop into the ampule containing the crystals and acts as a solvent. If less than the full dosage is desired the excess is then discarded. In the meantime spinal fluid is being collected, until the total amount, including what has been used as a solvent, reaches a total of 5 to 7cc. This is then injected slowly back through the lumbar puncture needle. This will give excellent anesthesia up to the level of the umbilicus. If, however, anesthesia is desired for

gall-bladder or stomach work, it is wiser to withdraw at first only about 3 cc., inject about half of it, withdraw about 3 cc. more, inject half of that, withdraw 4 or 5 cc. more and then inject the whole amount. The height of the anesthesia is influenced by the amount of the drug, the volume of fluid withdrawn, the rapidity of injection, and by the position of the patient. The moderate Trendelenburg position tends to increase the height, if novocaine is used, and decrease it when spinocain is used. Within the first ten minutes there is frequently rather marked fall in the systolic blood pressure which, if not promptly treated, may cause serious trouble. It is therefore customary with a systolic blood pressure under 150, to give either adrenalin m 1 for each ten pounds of body weight or ephedrine gr. 3/4. Personally I have been using the latter. By the time the patient can be turned on his back and properly draped the incision may be made. The anesthesia will last from one to one and a half hours. After the first ten minutes the drug becomes fixed in the tissues and the patient may be placed slowly in any position desired. While a few men are using spinal anesthesia for operations in any part of the body, it is generally accepted that it is dangerous to try to obtain anesthesia above the diaphragm.

The advantages claimed for a spinal anesthesia are:

1. It removes the dread so many patients have of "going to sleep."
2. The freedom from the postoperative nausea, vomiting and strain on the incision.
3. The better relaxation of the abdominal walls and the elimination of the tendency of the bowels to protrude, especially in an emergency abdominal operation where there has been no time for preparation.
4. The freedom from whatever deleterious effect the inhalation anesthetics may have on the various organs.
5. Theoretically, less danger of pulmonary complications especially where the patient has or recently has had a respiratory infection.
6. The anesthetic par excellence for patients with pulmonary tuberculosis.
7. There is probably no operation where spinal anesthesia is more indicated than in intestinal obstruction. The marked relaxation of the abdominal walls together with the contraction and relative quietness of the intestines, is a joy and a revelation to the surgeon accustomed to working with ballooned bowels constantly forcing themselves out of the incision.

Like any other therapeutic measure there are certain disadvantages and contra-indications which should be observed:

1. Cases of hypotension when the systolic pressure is below 90, are poor risks, but spinal anesthesia may be used if the blood pressure rises promptly after ephedrine.
2. General sepsis.
3. Marked hyper-tension.
4. Cases with passive congestion or myocordial degeneration.
5. Involvement of the cerebro-spinal system by such as tumors syphilis, or whenever the spinal fluid is cloudy.

The postoperative care is practically the same as after a general

anesthetic, except that the patient must be moved gently and should be kept in a slight Trendelenburg position for at least twenty-four hours to prevent postoperative headaches. A cup of coffee given as soon as the patient reaches his room is grateful to him and incidentally the sight of the patient sipping coffee is very reassuring to the family.

Some writers have advocated the injection of a small amount of novocaine into the spinal canal for the treatment of paralytic ileus not resulting from inflammation or obstruction. Theoretically such would be ideal treatment and in isolated cases would give excellent results. However, that is treading on dangerous ground, for we as surgeons realize that the terrific mortality from intestinal obstruction is due to delay. Also we realize the extreme difficulty of making a differential diagnosis between simple paralytic ileus and that due to obstruction or inflammation. Far better that we should disseminate the doctrine of early exploration in all cases of suspected obstruction. For the occasional case when an unnecessary abdominal exploration has been done which could have been relieved by spinal anesthesia alone, there will be a dozen cases which will be saved by the early exploration.

In the field of obstetrics spinal anesthesia is being thoroughly tried out. An abstract from an article by Ducuing of Paris is as follows:

"On the basis of numerous spinal anesthesias in pregnant women and of experiments on pregnant rabbits, Ducuing comes to the conclusion that pregnant uterus behaves under spinal anesthesia as does the pregnant uterus in rabbits after complete section of the lumbar part of the spinal cord, which severs the connection of the uterus with the cerebrospinal system. The uterine contractions become violent (and painless), but the labor is never started by the spinal anesthesia. In sixty-two cases of spinal anesthesia in nonobstetric abdominal and other kinds of operations on pregnant women (as well in the early as in the late stages of pregnancy), the author never observed an interruption of the pregnancy. When spinal anesthesia is resorted to during labor, the propulsion of the fetus is slower than one would have expected in the presence of such violent uterine contractions. The cervix is relaxed to a certain degree, allowing a more or less easy and rapid dilation, but the relaxation of the cervix is never so complete as the relaxation of other spincters during the same spinal anesthesia. Immediately after the expulsion or the extraction of the fetus, the uterus contracts well and remains well contracted throughout the puerperium, neither postpartum hemorrhages nor uterine colics were observed by the author. In Cesarean sections the incision of the uterus is almost bloodless; the fetus is usually delivered easily and in good condition, and the puerperium is uneventful."

Spinal anesthesia has come to stay, and it behooves us to learn all we can about it and to use it, not indiscriminately, but in properly selected cases.

In the Journal of Laboratory and Chemical Medicine in 1922, Tatum and Parsons described the use of barbital as an anesthetic for dogs. In April 1926 there appeared in the *Journal of Pharmacology and Experimental Therapeutics,* an article by Page and Corylos, entitled "Isoamyl ethyl barbituric acid (amytal), its use as an intravenous anesthetic."

Their work was entirely experimental and we find among their conclusions that:

1. Amytal, given intravenously, was found useful as an anesthetic for animal experimentation.
2. In dogs, a dosage of 45 to 60 mgm. was found most suitable for ordinary experimental procedures.
3. Small doses over suitable time intervals were found to be an effective method of anesthesia.
4. Using the maximum dose, the blood pressure fall was not great and recovery was rapid.

From that time on considerable experimental work was done with barbital preparations.

In the *Indianapolis Medical Journal* of April 1929, there appeared the following editorial: "Sodium amytal (sodium iso-amyl-ethyl barbiturate) has made its debut in Indianapolis as an intravenous anesthetic. A preliminary report appeared in February, this year, in the *Journal of the Indiana State Medical Association.* Indianapolis is fortunate in being able to contribute what promises to be an event in medical history.

"To date about four hundred cases have been operated with sodium amytal alone or in combination. As will be seen in the articles in this number of the *Indianapolis Medical Journal* almost any degree of anesthesia can be obtained. There is none of the post-operative nausea, vomiting and shock that is seen with ether. The drug, to be sure, is in its infancy, and should be used cautiously, in selected cases, until more information is obtained. Fortunately, ephedrin in combination with caffeine seems to be an efficient antidote for the only ill effects so far observed, namely, drop in blood pressure.

"However, from work done, sodium amytal is going to be a valuable addition to our armamentarium."

To Zerfas and McCallum of Indianapolis is generally given the credit for popularizing sodium iso-amyl-ethyl barbiturate (amytal) as an anesthetic in clinical work. They in turn give credit to Fredet and Perlis as the first to induce general anesthesia in man with compounds of the barbituric acid series. The preparation which they used was di-ethyl-allyl barbiturate (somnifene).

Last fall it was my privilege to observe the use of amytal rather extensively at Rochester and also at some of the clinics on the Pacific coast. After a year of pretty thorough trial some fairly definite conclusions can be drawn about it. Amytal is furnished as a powder, usually one gram, in a sealed ampule along with another ampule of a certain amount of triple distilled water. When these two are mixed the powder dissolves forming a clear 10% solution of the proper hydrogen-ion concentration. The dosage is approximately one grain for each ten pounds of body weight, with a maximum dose of twenty-two grains. Personally I have never used over fifteen grains in any one patient. The solution is injected intravenously at a rate not to exceed 1 cc. per minute, preferably slower. After about 3 cc. have been given the patient will drop off to sleep. Usually unconsciousness will come on suddenly, the patient frequently leaving a sentence unfinished. Roughly speaking, the more the drug given before unconsciousness supervenes

the larger the amount necessary for complete anesthesia and vice versa. At first the sleep is quiet and peaceful but later changes to typical snoring. There is a fall of blood pressure during administration which usually returns to normal in about thirty minutes. If the fall should be sufficient to alarm the anesthetist ephedrine or adrenalin may be given. This, however, is seldom necessary. Apparently a relatively larger dose of amytal is required in the high strung nervous patient especially in hyperthyroidism than in the phlegmatic. After about fifteen minutes the maximum anesthesia is obtained, and this degree of anesthesia is frequently maintained for at least two or three hours. For some reason the skin does not become thoroughly anesthetized and incision through it will frequently, to some degree, arouse the patient. Sistrunk, before the Southern Medical Association in Miami last November gave an analysis of fifteen hundred cases performed at the Mayo Clinic under this anesthetic. While it is generally conceded that most any operation can be done under amytal alone, yet the consensus of opinion is that it is not wise to push the dosage to complete anesthesia but rather to supplement it with a little ether, nitrous oxide or local. For example, in a recent operation for a rather adherent pelvic inflammatory disease, twelve grains were given to a patient weighing 130 pounds. A few whiffs of nitrous oxide was given while making the incision and while packing off the intestines. The nitrous oxide was then discontinued and a few whiffs given again as the incision was being closed. That is about typical of the average major operation under amytal, if we wish to keep well within the limits of safety.

A primipara, age 22, eight months pregnant, was brought into the hospital having convulsions. Shortly after admission she became practically maniacial, so that large doses of morphine, bromides and chloral hydrate had no effect. It required two orderlies to even keep her in bed. At the request of her physician I gave her 13 grains of amytal intravenously at 2:15 p.m. She slept soundly until 4:30 p.m. and was practically quiet until 7:00 p.m. In the meantime she was taken to the delivery room, the cervix dilated, a rectal tube placed into the uterus and the cervix packed with gauze. While she was quiet large quantities of fluid were given intravenously, subcutaneously and rectally. At 10:30 p.m. the obstetrician was able to thoroughly dilate the cervix and deliver her. From that time her restlessness was easily controlled by morphine and she proceeded to a complete recovery. On the other hand, fifteen grains given to a man wildly delirious from fracture of the skull did not have the slightest effect. Usually from about two to eight hours after operation the patient regains consciousness, can answer questions, and if necessary take nourishment. He will, however, immediately drop off to sleep, and if left alone may sleep forty-eight hours. During that period he can be easily roused but later usually has no recollection of the first twenty-four to thirty-six hours after operation. When he finally recovers complete consciousness, he is usually more refreshed because of that sleep and because of the absence of the severe retching so frequent after ether. It is absolutely necessary for the first twenty-four to forty-eight hours to have a nurse or attendant constantly at the bedside, as the patient in his dazed con-

dition will frequently attempt to get out of bed. Because of the stupor succeeding the operation catheterization becomes necessary in a large percentage of the cases. The strongest objection to the use of amytal is that common to any intravenous medication, that once it is introduced it cannot be withdrawn should the patient show any untoward symptoms or be hyper-susceptible. It should be remembered that amytal is almost an antidote for poisoning by cocaine or its derivatives.

Avertin (tribromethylalchol) is a white crystalline substance easily soluble in water at 40° c., but at 45° c. it breaks down with the formation of hydrobromic acid and the highly irritating substance dibromethylaldehyde. As an anesthetic it is given by rectum dissolved in distilled water to a strength of 3%. Approximately 1½ grains per kilo of body weight is the dosage. The technic or administration is similar to that of ether-oil colonic anesthesia. The effect on the patient in many ways resembles that of amytal.

Personally I have not used it nor seen it used, and my excuse for mentioning it is that it has been rather widely used in Germany and in parts of the British Isles for over two years. Judging from the reports from abroad, those who have been using it extensively are most enthusiastic in its praise. In this country Dr. Finney and others have been using it. In a recent conversation, Dr. Davis, Dr. Finney's anesthetist, told me that they had found it a most useful and satisfactory anesthetic.

A CONSIDERATION OF THE NEWER ANESTHETICS

R. O. Lyday, M.D., Greensboro

Since I was unaware of what phase of the subject of anesthesia would be so thoroughly dealt with by my predecessor this afternoon, I trust that I shall not take advantage of your patience and dwell unduly upon what has already been discussed.

So much progress has been made in the field of anesthesia since the introduction of nitrous oxide in 1844, ether in 1846, and chloroform in 1847 that only a brief consideration of the newer anesthetic agents can be mentioned in this short paper. However, it is always a timely subject and should call forth interesting and enlightening discussions in any medical gathering.

It is hardly appropriate to discuss, at this time, ethylene, since it has been employed generally for several years. Yet its use in combination with novocaine in the various forms of regional and local anesthesia and, more recently, in combination with the various barbituratis which are given for hypnotic purposes, makes it still concern us as the other inhalation anesthetics do and probably will for a long time to come.

Spinal Anesthesia. This form of anesthesia has gained great popularity in recent years due largely to the use of ephedrine. Through the work of Pitkin, Labat, Babcock and others, preparations are now on the market that are quite safe. The discovery of a preparation that mixes slowly and with difficulty with the spinal fluid, and of lower specific gravity, has meant much in making it possible for one to regulate the level of anesthesia.

Rectal Anesthesia. Roux, in 1846, showed that general anesthesia could be produced by rectal injections of water-ether solutions. The

fact that anesthesia could be produced by the absorption of ether through the rectal wall caused Gwathmey, in 1913, to introduce the well-known oil-ether combination. Rectal anesthesia, however, has never won the general approval of the medical profession like the inhalation group because the rate of absorption of ether in the rectum is difficult to control and this, with its narrow margin of safety, has made it unsatisfactory for surgical anesthesia except in selected cases. Again, serious degenerative conditions have been produced in the vital organs and severe local injury has occurred in the rectum and colon from the use of this combination.

Recently *Avertin* (tribro-methyl alcohol) has been used quite extensively, and it is found to be effective, readily absorbed, and it possesses a margin of safety twice that of ether in oil. A selective action on the sphincter muscles has been noted as a characteristic of this drug. Therefore, it is particularly useful in operations on the perineum and rectum. The amount usually given ranges from 60 to 100 mg. per kilo body weight, but Spiegel of New York has given as much as 180 mg. per kilo body weight in certain women and children without untoward symptoms. He does not advocate its general use for securing surgical anesthesia, but he feels that it is extremely valuable when supplemented by other general anesthetics.

Sodium Amytal. During the course of experimental work on various barbital preparations for hypnosis and narcosis, Zerfas and Isenberger found that sodium amytal (sodium iso-amyl-ethyl barbaturic acid), when given intravenously, produced various degrees of analgesia and anesthesia, fairly well dependent on the rate of administration and the amount of the drug administered. It was found that this drug acted in synergy with morphine and, like other barbital preparations, was valuable in counteracting the toxic effect of novocaine, which is occasionally encountered when operations are performed with large quantities of a solution of this drug. Its effect in abolishing the vomiting reflex was also very evident. After considerable animal experimentation, it was administered to patients and found both effective and safe.

When given intravenously in amounts of from 15 to 22 grains, the patient lapses immediately into a profound sleep. Since sleep comes on without any premonitory symptoms and the stage of excitement is entirely absent, it is a most pleasant form of anesthetic. There are disadvantages, however, to its general use for profound anesthesia; namely, shallow respiration, prolonged postoperative sleep, and occasional but rare postoperative delirium. A hypodermic of morphine will immediately control any restlessness or delirium that may appear. But what anesthetic agent is without its shortcomings in certain individuals and in certain types of operations?

My own experience is that this drug is of considerable value when given orally in doses of from 6 to 9 grains or intravenously in eight- to twelve-grain doses preoperatively for its hypnotic and narcotic effect. In combination with morphine and chlorotone it places the apprehensive patient in a perfect state of mind for the operating room. Then, with a few whiffs of nitrous oxide and oxygen, most any type of major operation may be performed satisfactorily.

Especially valuable is sodium amytal when used on patients with toxic goiters. When given by mouth preoperatively, as mentioned above, the effect is immediate. Frequently within five to ten minutes after its administration the patient is asleep—not in a state of surgical anesthesia—but in a state of narcosis and completely relieved of any excitement, and only to be aroused with some difficulty. A small amount of nitrous oxide and oxygen will produce satisfactory surgical anesthesia, usually without the slightest struggle. The breathing is quiet and rather shallow but regular during the operation, and the color is good. Immediately after discontinuing the nitrous oxide-oxygen anesthesia, the patient can be made to cough and respond to questions. For twelve to twenty-four hours following the operation he is in a state of more or less drowsiness, only awakening when aroused.

Postoperative nausea and vomiting are rare following the use of this drug, but it does occasionally occur and may be quite severe and persistent. Whether the drug was a factor in producing the nausea and vomiting in the few cases observed, I am unable to say. On the other hand, I believe that postoperative nausea and vomiting are much less common when sodium amytal is given as a preoperative measure to supplement any one of the inhalation anesthetics.

DISCUSSION

Dr. H. A. Royster (Raleigh): The question of anesthesia, whether general, local, or spinal, must always be of considerable interest to the surgeon, for whether or not he is directly responsible for anesthesia he is certainly indirectly vitally concerned. He may have, if he has a good anesthetizer, a good team; he may not be in each individual case the sole judge of the choice of the anesthetic or of its administration; but he is at the same time responsible and wishes to be responsible for the conduct of the patient's anesthesia during the operation. I shall not attempt to enter into the sides on this debate, because there seems to be no particular disagreement between the two essayists; but I shall hope to give just a general opening for the discussion and hope others may follow—those, perhaps, who have different ideas.

Sometimes when I hear of the newer modes, so called, of anesthesia that are being introduced I wonder if we are altogether or at all dissatisfied with our present modes of general inhalation anesthesia. We have well trained anesthetizers; we very, very rarely see a death or even a serious catastrophe, if I judge aright, with the administration of general anesthetics. I do not know just exactly to what the situation at the present time is due. In many clinics abroad I have seen many years ago local anesthesia used when we would probably not use it, and I was not at all surprised when I observed what I would call the very inefficient manner of giving the general anesthetics. But we may question ourselves—are not we pretty well satisfied with our general anesthetics as they go from day to day? As to the so-called newer anesthetics or, as I would prefer to call them, the newer semi-anesthetics, I agree quite with Dr. Griffith and also with Dr. Lyday that these agents are useful for producing a profound narcosis as an aid to the local anesthesia and not to supplant the other anesthetics entirely. When I think of these things being regarded as perhaps true I am reminded that what

is true may not be new and what is new may not be true. The effect that I should like to get, as I am sure we should, is safe anesthesia, no manner which way we get it. I am not at all sure that I should like all my patients wideawake in the clinic. Sometimes when I question patients and ask whether they would like this type of anethesia they say they do not want to be awake when the operation is going on; they want to know nothing about the operation. Certainly in a general clinic it may be embarrassing to have the patient know what is going on. Ether, with supplementary aids, is not at all dangerous and is not disagreeable. Dr. Griffith made the point that when you want relaxation you want general anesthesia and want ether. Dr. Griffith I think, if I am not mistaken, was the first man in America to show that ether can be given to tuberculosis patients without finding any more trouble in the lungs afterward than before.

As to the so-called barbiturics, I think there are four or five that might be considered. I heard a discussion of them at the Southern Surgical Association last December by Dr. Bartlett, in which he recommended luminal. His plan was to give fifteen grains the night before the operation and fifteen grains the next morning, about two hours before, by mouth. He was particularly interested in the effect of this drug in thyroid surgery. We have tried that out in several cases, never going quite to the fifteen grains, but to ten or twelve, and have had wonderful effects with it. Luminal is a most useful drug. It is probably the most stable of all these barbituric preparations. I have found it very effective in so-called post-operative gas pains, when the patient is not vomiting.

Veronal has also been discussed. After all, it may be a question of choosing your particular favorite among these drugs.

Then Dr. Stone, of Baltimore, brought up the use of avertin, which has been continued there in experimental and clinical work. I believe avertin will be found more useful in some cases than others.

If we regard these substances as merely giving some anesthesia they are all valuable, and I think we shall have some more splendid reports from them. But let us understand first and last that these are to be used selectively in certain cases, just as you select your drugs for therapeutic effects; and unless it is done with discrimination they may fall into disrepute from misuse.

When I think of intravenous anesthesia I am reminded of the saying: "Two things come not back, the sent arrow and the spoken word." That applies also to intravenous medication; you have to stand or fall by what you have done.

My individual feeling is that when we get a safe anesthetic which can be given by the mouth or the rectum preceding the use of any anesthetic which we may apply then we have gone a long way toward solving the problem of anesthesia and have reached the stage when we can say to the patient that we have made more improvements in anesthesia than we have in operating.

As to spinal anesthesia, in both clinics in which we work we have seen good results. I think here the selective mind must be at work, also. I shall never forget that when spinal anesthesia first came into

use Dr. Charles Mayo was asked to open the discussion on the subject. When called upon he made one remark: "When a man sticks a needle in my back I am going to be asleep when he does it." That gives you a little thought. Unless you have well trained teams, unless the man who gives the spinal anesthesia is not the operator, you are going constantly to get into difficulties. The man who has a long clinic and tries to give spinal anesthesia himself to his patients will find himself somewhat worn out and a little troubled when he gets to his last patients. It does give beautiful relaxation sometimes, and you need relaxation. My position on this is on the middle ground. I am glad to see the enthusiasm of my young associates, but I occupy a rather conservative position. To this the words of Pope apply:

> Be not the first by whom the new is tried,
> Nor yet the last to lay the old aside.

Dr. W. H. Sprunt (Winston-Salem): The first thing we must demand of an anesthetic is that it be safe. I think the development lately has come from the effort to keep anethesia safe and also make it more pleasant for the patient. In that connection one form of anesthesia was not mentioned; that is, sacral anesthesia. I think the men who have used sacral anesthesia for prostates still feel that sacral anesthesia is a little safer than spinal.

In the way of spinal anesthesia we have been very much impressed by spinocain. We sometimes precede it with a small amount of amytal given by mouth, relieving any apprehension the patient may have and still getting the benefit of spinocain.

In regard to amytal, I started using that last fall and used it in doses ranging from three up to twelve or sometimes fifteen grains. It gave beautiful sleep very promptly, sometimes in three minutes. At times we have to use a little gas or ether with it. The thing I object to about it is the extremely shallow respiration. I have not had the experience Dr. Griffith spoke of, of deeper respiration coming on later. Personally I do not like the looks of a patient who has had a large amount of amytal. We started giving it by mouth to patients with toxic thyroid, and I think its main use will be for that purpose. I think giving it in the vein to extremely toxic patients defeats its purpose. We have found that by giving amytal several hours before operation by mouth to these patients the patient is either asleep or not at all excited about what is going on; however, when you stick a needle in them they will want to jump off the table, so it has been our practice to give nitrous oxide. These patients go through the operation beautifully. All afternoon they are drowsy, but if they are aroused they will take water. The next day they will tell you they have practically no recollection of going through the operation or having anything done. We have found one good effect is the lack of apprehension of a second operation. I had a man tell me he did not care when I did the second stage of an operation if I would give him the same anesthetic. That is especially true of those patients who have had a general anesthetic, especially ether, without any previous amytal.

In three cases last winter given amytal, pneumonia developed. The question arose in my mind as to whether the amytal had anything to

do with the pneumonia. All had ether. Ether will increase the respirations. I do not know, as I say, whether the amytal had anything to do with it or not, but I was impressed with the extremely shallow respiration. Sometime later I started using avertin, which I had seen used in Washington and Baltimore. I used it as I had come to use amytal, as a basic anesthesia, not with the idea of producing surgical anesthesia. I use from 80 to 100 milligrams per kilo. When avertin first came out, in Germany, they gave much larger doses; and 145 milligrams per kilo is usually recommended in this country, but I prefer the smaller dose. It is particularly good in children; if you give avertin per rectum the child will turn over and go to sleep and can be carried to the operating room. To all intents and purposes he is in a natural sleep; the breathing is not disturbed, and the pulse is regular. If you then give a little ether you spare the child the shock of holding it down and giving it ether, which to me is one of the worst features of operating on children. So far as I have observed there is no bad effect. In some cases there has been reported a proctitis after giving avertin, but I think that may be due to faulty technic. If heated above —— degrees it will undergo decomposition. For hemorrhoid operations and perineotomies it is very good. You get a certain amount of relaxation of the sphincter and can do the operation very easily. The patient will stay drowsy about two hours and then if given morphine will stay quiet for the next six hours or so, during the time the average hemorrhoid patient is crying for morphine.

There is one thing I should like to speak of. We do not use it alone for producing surgical anesthesia. Avertin apparently produces very poor brain block. Apparently the patient will be asleep, but when you get down to the peritoneum and open the peritoneum there will be shock. We use a little ether along with it, even if the patient does not seem to need it. That applies to abdominal operation, not to minor work such as hemorrhoids, etc. The same thing applies to amytal. I notice in the last bulletin the manufacturers caution against that and say they advise not using amytal alone for surgical anesthesia but using some other drug with it.

Dr. J. W. Tankersley (Greensboro): I have had a little experience with spinal anesthesia, the use of which started about thirteen years ago. These fellows seem to be talking about combination anesthesia rather than one anesthestic. I think they are all good. I want to endorse what Dr. Royster had to say about the responsibility of the surgeon. I think the responsibility is on the surgeon; he is more familiar with these conditions, and he is the man that should use it. I have used spinal anesthesia well over one thousand times without any mortality and usually without any untoward effect. I give it always myself. Sodium amytal and those things I give by mouth preliminary to local anesthesia. I seldom use it for spinal. Ephedrin I give invariably before I use spinal, unless there is a low blood pressure. It has been shown that stimulants afterwards have absolutely no effect on the blood pressure; if you are going to use it you must use it before. It requires considerable experience in doing spinal anesthesia to get the best results. The needle must be the smallest you can get fluid through, to avoid leakage

of spinal fluid. The fluid must go into the subdural space, or otherwise you may get paralysis and an unfortunate result. As you all know, the motor nerves are all in the anterior part of the spine, and if you get in there you are likely to get complications. The patient can move his legs on the table and wiggle his toes, yet be completely anesthetized. I have been able to do almost any kind of operation under spinal anesthesia without ether or gas or anything else. I have had in my series of well over a thousand cases two or three failures. I always use a heavier solution than the spinal fluid. I have used Pitkin's solution and found that gives me too profound an anesthesia; therefore I use my own fluid. I have injected as high up as the tenth dorsal without any ill effects whatever. I invariably elect to do gall-bladder surgery under spinal anesthesia, because of the ease in sewing up; you get such perfect relaxation that you have no trouble in sewing up the peritoneum or anything else.

Avertin is not an anesthesia par excellence. While it may be perfectly safe, some cases of diarrhea following its use in the bowel have been reported, and some deaths have been reported.

Sodium amytal, I want to say again, I believe is a good adjunct to any form of anesthesia and enables the patient to come off the table in a drowsy stage whether you use local or ether or any form of anesthesia. I today do sixty per cent of my operations under some form of local anesthesia—local or infiltration of spinal. As Dr. Royster says, sometimes we may get into an embarrassing situation with the patient awake on the table, and I put those patients to sleep when they prefer it.

Dr. Robt. W. McKay (Charlotte): I should like to add my voice to that of Dr. Sprunt on avertin. Avertin is not really in the experimental stage; in this country it is being used to a great extent by Dr. Finney, and it is obtainable now in North Carolina. The directions are given fully on the package, and if you follow those you will not have a proctitis. For cystoscopies or other painful procedures you can vary the amount of anesthesia as you wish. Those of us who have been to the operating room on a stretcher or have been welcomed by the operating nurse with a flash of the instruments realize that it is very well for the patient to be asleep when he enters the operating room.

Dr. G. C. Cooke (Winston-Salem): This discussion shows that while there is not an ideal anesthetic for all cases, yet there may be an ideal anesthetic for each case. While I am not an anesthetist, I have given spinal anesthesia in over one thousand cases. For the first four or five cases I had some difficulty; since then the anesthesia has been ideal. I attribute that to perfection of technic, as well as to selection of the cases for which it was used. There are a few things I have learned not to do in giving spinal anesthesia. The first is not to use it in children. Second, in elderly people, especially if they are weak, don't give a hypodermic of morphine beforehand. Third, I never worry about the blood pressure. I have seen the blood pressure drop in many cases to where the pulse was imperceptible and continue so throughout the operation, but I have never seen any bad results from that. I never give it above the second lumbar interspace. It is not necessary. I dissolve it in the spinal fluid. You can control the height, especially when you use

neocain, by the amount of fluid used; that is, by the amount withdrawn and reinjected. It does not paralyze the motor nerves. You can not paralyze the respiratory muscles by neocain applied to the medulla; that has been shown by experimentation. It certainly does give you the best relaxation and the best post-operative results of any anesthetic that is used. In some cases, where the anesthesia is profound, there will be nausea; there has been in my experience. Ether is the best antidote, because it immediately stops the nausea, and if given (just a little bit) when the nausea or apprehension takes place it relieves both and stimulates and is the best stimulus to the blood pressure. Ether does affect the blood pressure and brings the blood pressure right back up where you want it. The consideration of inhalation anesthetics is good even in this connection, because, as I say, ether will remove the bad effects, if any occur while under spinal. At the same time I wish someone would check up on the post-operative pneumonias. In our experience they have been negligible, but we have had some cases of massive atelectasis in the lungs following, and I believe most so-called pneumonias are atelectasis. We immediately bronchoscope such cases and allow air to enter the lungs, along with aspiration, and the cure, or relief of the symptoms, has been surprising. They go two days with severe lung symptoms and are normal the next day following a bronchoscopy.

Dr. Julian A. Moore (Asheville): I do believe that tuberculosis is affected by ether. I have seen a number of cases of tuberculosis reactivated by ether anesthesia. About two per cent are activated after anesthesia.

Dr. J. D. Highsmith (Fayetteville): I am another of the enthusiasts on the subject of spinal anesthesia. I have used spinal anesthesia for the past seven years, with but one fatality; and I feel that that was my own fault, because the patient was in a state of profound shock when I gave the spinal. So I learned from that that it is not safe, or that spinal anesthesia is absolutely contraindicated in the presence of shock. The use of ephedrin has revolutionized spinal anesthesia. Before I started using ephedrin I always had the intravenous glucose solution ready for immediate injection when the blood pressure dropped to below 50 or 60 systolic; since using ephedrin I have had occasion just a few times to employ the intravenous glucose. Especially in urological surgery is spinal anesthesia, preceded by the injection of ephedrin, the ideal anesthetic. In surgery of the gall bladder, also, it is ideal; it simplifies things. To my mind, spinal anesthesia has done more than anything else to simplify surgical technic. It makes the operation much easier. Closure of the peritoneum, especially, is much easier.

Dr. Griffith (closing the discussion): I think it has been shown that amytal and avertin are not general anesthetics and should not be considered general anesthetics; they are simply steps further along in preliminary medication. We all know the good effects of a dose of morphine before an operation, and these are simply further steps. I think for the coming year I shall continue to do eighty per cent of my work with ether, but these new drugs are like instruments. We have our standard instruments, but when we set up the instrument tray we put many things on it that we do not ordinarily use. So with these drugs, I think

we should be familiar with them, so that in selected cases we shall be able to use them to good advantage. We do not want to rush in and use them on every patient, neither do we want to deprive the particular patient of the use of one of these anesthetics when it may save his life.

Dr. Lyday (closing the discussion) : Dr. Royster made a suggestion to me just now which I think is very good, that we might decide this question by asking the surgeons present to indicate which anesthetic they would like used for themselves if they were to be operated on.

I enjoyed the discussion and appreciated it.

THE PANCREAS

Dr. B. J. Lawrence, Raleigh

The pancreas is one of the most important organs in the abdominal cavity and it is one of the essential organs. In 1884 Billroth removed the pancreas, though, diabetes followed immediately. The very nature of its position and the character of its secretion render it a very vital organ. It lies high in the abdominal cavity, situated in one of the most dangerous areas of the abdomen. I dare say it is the most difficult organ to reach or manipulate in the entire belly cavity. Pancreatitis is not an everyday occurrence. Though it is by no means uncommon. A great deal has been written about the pancreas and the various pathological conditions occuring therein. Pancreatitis is not always easy to diagnose. In fact it may and usually is a very difficult diagnosis to make and a correct diagnosis of any pathological change in the pancreas may be very difficult.

Pathology occuring in the pancreas occupies the attention of both the internist and the surgeon. For a long time there were many questions regarding the pancreas about which we knew very little and even now the management of an injury to the pancreas challenges the best minds and talent in our profession.

It is not my purpose to consider the pathology involving the islands of Langerhans resulting in diabetes. Certainly it would be presumptuous on my part to invite your attention to the consideration of a question about which many of you know far more than I. Sufficient to say that the discovery of insulin and the miraculous control which it manifests over an excessive amount of blood sugar is one of the outstanding accomplishments of modern scientific medicine.

It is my purpose, however, to ask you to consider with me for a brief moment pancreatitis as a result of an infection; or an acute pancreatitis as a result of a traumatic injury. There are some famous and well known cases of pancreatitis resulting in death, following traumatic injury of the pancreas. One and probably two of the assassinated Presidents were supposed to have had pancreatic injuries. I believe it will be agreed by all medical men that an injury to the pancreas is fraught with grave danger, that the mortality rate is high and that the majority are agreed that the management of pancreatic injuries demands surgical attention. I think further that the operation must be immediate and that the drainage must be thorough.

It is a well recognized fact that when the pancreatic fluid comes in contact with the other abdominal viscera it causes a destruction or a

sort of fatty necrosis and, once it gets started it has a tendency to progress. It is thought by many of the outstanding medical men that this tendency to progress is one of the chief factors which makes the mortality in these cases so high and their management difficult.

I am not thinking at this time primarily of an acute pancreatitis due to trauma. I would like for you to think more particularly of pancreatitis so frequently seen as a secondary process or one of the sequalae following in the course of gall bladder infection. So closely associated is the pathology of the gall bladder and the pancreas that many of the leading surgeons, and I think a great many of the internists, will agree that colecystitis is the forerunner of most cases of pancreatitis. In my own experience I have never seen a case of pancreatitis that was not secondary to colecystitis, except in acute traumatic injuries of the pancreas. There are of course pancreatic cysts and the various tumors of the pancreas, both benign and malignant which are not secondary to the gall bladder. However, I do not think we could properly classify this particular group under the term pancreatitis. Pancreatitis is more commonly seen in the middle-aged or older people. Usually there is the history of indigestion; gastric disturbance and general abdominal distress along with the whole chain of symptoms which usually accompany an abdominal catastrophe. I think one of the reasons why the diagnosis is often overlooked is the fact that it is not an everyday occurrence and we are not looking for it as we should. It seems to me that we are most apt to confuse this diagnosis with that of an intestinal obstruction, or an acute colecystitis or mesanteric thrombosis. It would not make so much difference if one was unable to differentiate between an intestinal obstruction and an acute pancreatitis, because the abdomen has to be opened immediately in each case. I believe all surgeons and most medical men will agree that acute pancreatitis is most easily and successfully managed by draining the gall bladder and by doing it as soon as the condition is recognized. An abscess of the pancreas should be drained direct. It is more important to determine between colecystitis and acute pancreatitis because one does not want to operate on a gall bladder until the acute state subsides, except empyema of the gall bladder where a perforation is feared or in certain instances where a complete block of the common duct is present. Therefore, in a case of suspected colecystitis it is highly desirable to determine as far as possible the degree of pancreatitis present and to do so as soon as possible.

Usually the symptoms are more acute and severe. The facial expression is more anxious and shows clearly that of impending danger. There is apt to be a mass in the upper abdomen, extending across to the left side, this contrast with that of a simple colecystitis in which the mass is apt to be more or less pear-shaped and extending downward. Vomiting is apt to be persistent and the white blood count is high. Jaundice may or may not be present, though it usually is present. An accurate knowledge of the blood sugar may be very helpful and I think ought to be taken in such cases. Because if the pancreas is really seriously involved one may feel certain that the process has been under way a long time before the symptoms became acute and violent. One surely would expect the blood sugar to be up if the pancreas is damaged.

I want to report two or three cases of acute pancreatitis which have come under my observation recently. One of these cases I saw in consultation with a colleague. The other two were on my service and I operated on each of them. Case A, an elderly man, brought to the hospital with severe abdominal symptoms, slight jaundice, vomiting and abdominal distress, and a mass extending across the upper abdomen toward the left side. This case had some of the earmarks of a malignant growth and of course symptoms of colecystitis. This man was treated conservatively by his physician. He was watched carefully and consultations were utilized. It was deemed wise to do some more watching and waiting. A further and subsequent study of the case was made and further consultations held. We concluded that we ought to open his abdomen. His abdomen was opened. There was a large distended gall bladder full of stones, and a tremendously enlarged pancreas. There was a marked fatty necrosis present. The patient was extremely toxic. A colecystomy was done as quickly as possible in an effort to establish pancreatic drainage. The patient was returned to bed and succumbed in less than twenty-four hours. The second case was a small boy brought into the hospital with a rifle shot through the upper abdomen and a little to the left of the umbilicus. The patient had all the earmarks of hemorrhage and shock. The abdomen was opened immediately. The punctured stomach and bowel closed. The puncture in the pancreas was sutured with catgut and thoroughly drained. Six hours later the patient was transfused and to my delight and surprise he came around.

The third case was a stout adult man around fifty years of age. He was brought to the hospital toxic, slightly jaundiced, vomiting suffering with acute abdominal colic. An immediate examination of the case brought us to the conclusion that he undoubtedly had an acute colecystitis. He had been sick forty-eight hours and had all the symptoms of an acutely inflamed gall bladder, including pasty stools and jaundice. There was, however, no definite mass in the area of the gall bladder and no marked rigidity. His white blood count was around twenty-eight thousand and his temperature was ninety-nine plus. We decided to treat him conservatively and did so for twenty-four hours. For the first twelve or eighteen hours he seemed to improve. That is his distention was less, his vomiting was less. By the end of thirty hours, he was not so well, we suspected an acute pancreatitis. A study of his blood chemistry showed his blood sugar to be two hundred and eight. Thereupon we decided to open his abdomen with a probable diagnosis of pancreatitis secondary to colecystitis.

He had a gall bladder full of stones. An enlarged pancreas, fatty necrosis was present. The abdomen was full of a dark haemotanganous fluid and the pancreas was much swollen and discolored. I did a colecystostomy as quickly as I could. I left a large tube in the gall bladder and two other drains in the belly. I did not think the man could live many hours and rather foolishly stated that to his family. I do not believe either of the other physicians present at the operation thought that the man could live more than twenty-four hours. He did live twenty-four hours and after forty-eight hours he began gradually to improve.

His temperature went down, he stopped vomiting. About the fifth day he had profuse and bloody stools. So much so that we gave him a bismuth mixture and cut off all purgation. The bloody stools stopped after three or four days and he made further progress. His jaundice disappeared completely. His blood sugar remained up for a time. Later we were able to get it down to one hundred and thirty-eight by the aid of insulin. The patient was able to take nourishment freely. At times he did regurgitate a dark greenish material. He passed large quantities of bile from his bowels. His pulse remained good throughout this trying period and frankly I thought he would recover. On October 1st I noticed he was not so well and did not look happy. During the night of the 1st he vomited and on the morning of the second we were satisfied that he was not so well as he had been, but personally I did not view his condition with alarm even then. At seven o'clock on October 3rd, twenty-four days after his operation, the nurse found him in a cold sweat with cynosis. The resident physician saw him at eight-thirty and I also saw him. His blood pressure was then eight to sixty and his heart sounded distant. There was some rattling in his chest though his pulse rate was about ninety. The patient was thoroughly conscious. His abdomen was flat, the bile drain was clear and free. He expired in half an hour.

As a summary I wish to say that pancreatitis is not so rare as we might suppose. Second, pancreatitis other than that due to trauma is secondary to colecystitis, and third that the diagnosis must be made at an early stage if the patient is to recover. Fourth, the diagnosis is most frequently confused with colecystitis with which it is closely associated or with an intestinal obstruction, or with a malignant growth in the upper abdomen, or mesenteric thrombosis. Frankly I think it behooves us to bear this condition in mind in dealing with all cases of vague abdominal symptoms in elderly people.

TUBERCULOUS EMPYEMA: TREATMENT BY A COMBINATION OF IRRIGATION AND SUCTION WITH ASEPTIC PARAVERTEBRAL THORACOPLASTY

Deryl Hart, M.D., Durham

In presenting this method of treatment for tuberculosis empyema we realize that the number of cases is so small that general conclusions cannot be drawn either as to the final results which may be obtained or the best course to follow during treatment. The method, however, has undoubtedly proved of value in serious or otherwise hopeless cases. The treatment has to a great extent been along lines laid out before the method was actually used with a patient, has been modified in minor details to meet unforseen conditions, and may be supplanted by some more satisfactory procedure as greater experience is gained. Those using this type of treatment should be entirely familiar with the suction units which they are to use, should be able to secure any amount of suction that is desired, and should be able to adjust the suction accurately and to regulate the amount easily. It is also necessary to have

nursing attention for the patient, preferably in a hospital. Facilities must be available for performing collapsing operations on the chest. The surgeon must be mentally prepared for a prolonged course with unforseen complications, and must be willing to give much time to personal supervision of the irrigation and suction apparatus, since it needs frequent adjustment to meet the changing requirements of the case.

The treatment of acute and semichronic empyema by tidal irrigation and suction has been described in previous publications.[1] Up to the present time between 80 and 90 cases have been treated. An empyema cavity of 4 months duration in an adult has closed to a sinus within less than 3 weeks. In another patient with an empyema cavity of 8 months duration, holding several hundred cubic centimeters and opening into a bronchial fistula, the fistula closed within 7 days, the cavity closed to a sinus within 53 days, and the patient was discharged with the sinus healed about 70 days after treatment was started. In 10 patients with a bronchial fistula of from a few days to 8 months' duration, complicating a pyogenic empyema, the fistula has closed in every case within less than 7 days after suction was applied. Experience had shown that through a catheter inserted between the ribs we could irrigate a chronic empyema cavity for an indefinite period of time without leakage and without obstruction of the tube. We had hoped to be able to avoid secondary infection, and in the first and only case of pure tuberculosis empyema this was accomplished for a period of 11 weeks, but when the tube had to be changed because of deterioration of the rubber the cavity became infected with staphylococcus aureus. We had hoped that the infection could be controlled by free irrigation and drainage, and have found this to be possible. The experience gained in the treatment of these cases formed the basis on which we have worked out a method of treatment for tuberculous empyema.

The plan of treatment depended on obliteration of the cavity by expansion of the collapsed lung, elevation of the diaphragm, and collapse of the chest wall either by limitation of expansion or by a thoracoplasty. Expansion of a lung infected with tuberculosis, particularly when there was cavity formation, might cause an exacerbation of the symptoms of the intrapulmonary disease, but in case this should occur it could be controlled by an extrapleural paravertebral thoracoplasty. If it should be impossible to expand the collapsed lung to a sufficient degree to obliterate the dead space, we could still resort to an extrapleural paravertebral thoracoplasty, which could be performed in an aseptic field. During this time the cavity could be irrigated and drained and suction applied through a tube inserted in another part of the chest. The suction would enable us to obtain a far greater collapse than we could otherwise secure, and would eliminate the uncomfortable tight strapping of the chest.

These procedures were planned on the supposition that the tuberculous cavity would heal if the secondary infection could be controlled, the

[1]Deryl Hart, Acute Empyema: Treatment by Continuous Tidal Irrigation and Drainage Dependent on Normal Respiratory Movements, Arch. Surg., 1928, xvii, 102-116; Empyema: A Method of Treatment by Tidal Irrigation and Suction, with Results Obtained in 30 Cases, Internat. Surg. Digest, vii, No. 1; Empyema: Treatment by Tidal Irrigation and Suction, Arch. Surg., 1929, xix, 1732-65; Empyema, Acute, Chronic, and Tuberculous: Report of Fifty Cases Treated by Tidal Irrigation and Suction, Jour. Am. Med. Asso., 1929, xciii, 1724-29.

redundant and unhealthy granulations removed, and the surfaces of the cavity brought together and held in apposition. It was thought that normal salt solution and Dakin's solution used alternately would control the infection and freshen the surfaces. We later found that dilute (one to two per cent) acetic acid was a valuable addition. Not only does this control infection with the pyocyaneus bacillus, but it also helps to remove redundant granulations, fibrin, and exudates from the cavity. A 3 per cent solution of acetic acid will become blood tinged within a few minutes after being introduced into the cavity, so that one to two per cent is as strong as we can generally use. The apposition was to be obtained by a combination of suction and collapsing operations.

Bronchial Fistulae. The case which gave us the greatest concern was of a large bronchial fistula opening into a cavity in a patient whose lung had been collapsed for 6 years (Patient III below). After the pus had been aspirated to give a pneumothorax, an X-ray was taken which showed the lung as a straight line of dense fibrous tissue just to the right of the sternum (Fig. 5). We had explained the closure of bronchial fistulae in patients with acute and semichronic empyema on the basis of the mechanical apposition of the surfaces which permitted the parietal pleura to seal over the opening in the visceral pleura. We felt that if this theory should be correct and we could bring the parietal chest wall against the collapsed lung, we should also be able to close a fistula of long duration in a permanently collapsed lung. To bring the chest wall into apposition with the collapsed lung might require both a paravertebral and a parasternal thoracoplasty, so the tube must be inserted in the mid- or anterior axillary line to be out of both operative fields.

We also had to take into consideration the fact that in the presence of a large bronchial fistula we could not obtain negative pressure in the empyema cavity, since this would cause such rapid elimination of air through the fistula as to embarrass respirations by drawing air away from the normal lung. During inspiration this negative pressure might be transmitted through a large fistula and the broncho-tracheal system to the opposite lung and either limit expansion or increase the muscular effort of breathing, either of which would be contra-indicated in an already weak and debilitated patient. With the pus in the empyema cavity normally under atmospheric pressure and under positive pressure during expiration and coughing, it would dissect along any opening which should be made below the fluid level. Of course a tidal irrigation could not be obtained as long as there was a continuous current of air or fluid passing out through the tube entering the chest. This disadvantage would be more than counterbalanced by the advantage that no fluid or pus would pass through the fistula into the bronchus and trachea as long as the current of air there was maintained from trachea to empyema cavity.

It was decided that continuous aspiration of the cavity with periodic irrigations would best serve to give free drainage and permit the patient to improve to a degree where she could stand operative collapse of the chest. The tube was to be inserted in the anterior axillary line and passed through the chest wall in such a direction and for such a distance that the tip, where the only holes are located, would lie in the trough

along the vertebral column. With the patient lying down this position of the tube would keep the cavity empty as long as aspiration was continued, would give dependent drainage of all other parts of the infected wall, and would place the trocar thoracotomy wound above the fluid level, so that in the absence of suction the pus could not dissect along the tube. Furthermore, the bronchial fistula would be above the most dependent part of the cavity, thus permitting periodic washing out of the drainage trough with a non-irritating solution. Finally, we hoped that if we could keep the fistula above the level of the pus the granulations would become more healthy and, being free from the irrigation of the pus, would gradually encroach on the fistulous opening. This would eventually permit us to apply suction without causing dyspnoea from the rapid elimination of air from the trachea and the normal lung.

Four patients with tuberculous empyema in which tubercle bacilli were demonstrated by guinea pig inoculation have been treated by this method. Two are well, and two are still in the hospital, each with a cavity holding less than 25 c.c. (Figs. 4 & 6). Two patients had a bronchial fistula; one of them is well, while in the other the fistula is closed and the cavity holds only 10 c.c. A report of each case is given in the order in which the patients came under treatment.

Patient I. Simple tuberculous empyema without secondary infection.

A 20 year old white male, ill for one year, had an onset with a spontaneous pneumothorax, followed by an effusion on the left side. The fluid became thick and purulent, reaccumulated rapidly, and about 1800 c.c. had to be aspirated every 10 days to relieve dyspnoea. There had been 17 aspirations of this material, and when the patient came under treatment the heart and mediastinum were displaced to the right (Fig.). Repeated guinea pig inoculations had been positive for tuberculosis. Tidal irrigation and suction were instituted and continued for 6 months, during which time the lung partially expanded, the chest wall partially collapsed, and the surfaces, which were brought into apposition, grew together. As a result the cavity held only 300 c.c. when all suction was released. The remaining cavity could not be obliterated. There had been an occasional febrile reaction and an occasional loss of a small amount of blood from the cavity when Dakin's solution and one per cent acetic acid were being used for irrigations.

The cavity was then thoroughly cleaned out by irrigation and the surfaces were freshened by the use of Dakin's solution and acetic acid until there was bleeding. The first stage of an extrapleural paravertebral thoracoplasty was performed, large segments of the 5th through the 11th rib being removed. The caseation had extended out around the ribs in places, but *primary healing was obtained,* while irrigation and suction were never discontinued.

Thirty-four days after the first stage thoracoplasty the cavity held 90 c.c., and the second stage was performed, when as much as possible of the upper four ribs was removed. *Primary healing was obtained.* The patient showed rapid improvement almost from the time of this operation; the cavity rapidly closed down, and at the end of a month held 15 c.c.

The tube was kept in the chest for 2 months and 10 days after the last operation and was then removed, and the sinus healed within 7 days.

The temperature, which had not been above 99° F. for 6 weeks and up to 102.2° F. on only two occasions since the day after the second stage thoracoplasty, did not go above 98.6° F. for the month following the removal of the tube, and the patient was transferred to the State Tuberculosis Sanatorium. His improvement there for the past four months has been rapid and continuous, so that now he is doing light work, and is free of symptoms and physical signs of the disease (Fig. 2).

Patient II. Pulmonary tuberculosis. Tuberculous empyema. Empyema cavity secondarily infected with staphylococcus aureus.

A 35 year old man had a history of pneumonia, pleurisy with effusion, dyspnoea, loss of weight, fever, anemia, oedema of ankles, swelling of abdomen, weakness, sweating, non-productive cough, and dull pain in the right chest, extending over a period of 6 months. Two days before he came under treatment 1000 c.c. of thick, reddish-brown, almost chocolate-colored fluid were aspirated from the right chest (Fig. 3). Cultures of this fluid showed a pure growth of staphylococcus aureus, and two guinea pigs inoculated with this material later died of tuberculosis.

When first seen with reference to surgical treatment there was an extravasation of pus beneath the skin extending from the clavicle and apex of the axilla to the crest of the ileum, and almost from the midline in front of the midline behind. The most noticeable swelling and tenderness were at the point of aspiration. The temperature was 104° F. and the pulse between 110 and 120. There was a large mass, apparently liver, in the upper right abdomen, and the ankles were quite oedematous.

Tidal irrigation and moderate suction were immediately instituted to stop the extravasation into the chest wall. The more heavily infected subcutaneous tissue was drained through small incisions. The infection subsided, and the temperature, pulse, and white blood count came down until they were only slightly above normal.

For almost 5 months tidal irrigation and drainage were continued and the condition of the patient improved greatly. However, when any attempt was made to obliterate the cavity by expanding the lung there was a severe temperature reaction and his general condition became worse.

A first stage extrapleural paravertebral thoracoplasty was then performed, large segments of the 6th through the 11th rib being removed. Pirmary healing was obtained. The patient continued to run an irregular temperature with the peak as high as 101° F. There was striking subjective improvement in the patient's condition, however, and 12 days after the operation he stated that he was feeling much better than at any previous time during his illness.

Twenty-nine days after the first stage thoracoplasty the second stage was performed, as much as possible of the upper 5 ribs being resected. The wounds healed per primam. There was moderate elevation of temperature, but the patient's general condition showed rapid improvement, and there was a great diminution in the amount of fibrin and exudate coming from the chest. The rectal temperature came down to between 99° F. and 100° F., the hemoglobin rose from 60 per cent to 88 per cent, and the red blood count from 4,000,000 to 5,600,000.

Despite this improvement and the collapse of the cavity without temperature elevation the walls of the cavity would not adhere, so after 3 months it was decided to release most of the suction and permit extensive irrigation with salt solution, Dakin's solution, and 3 per cent acetic acid. This procedure gave the patient pain in the right shoulder and caused some bleeding from the cavity. After 2 weeks of this treatment the surfaces were again drawn into apposition by gradually increasing the suction over a period of 2 weeks. After 3 weeks in apposition but with sufficiently low suction to permit a moderate reversal of the flow of fluid in the thoracotomy tube with inspiration, the size of the cavity had diminished from 125 c.c. to 35 c.c. when all suction was released. The rectal temperature, taken every 4 hours, has been above 100° F. only three times, and has not reached 101° F. within the past 12 weeks. During the past 3 weeks it has been between 98° and 99° F., and the cavity now holds only 25 c.c. when all suction is released (Fig. 4).

Patient III. Tuberculous empyema of 6 years' duration. Bronchial fistula of 5 months' duration.

A 27 year old white woman 6 years ago developed pleurisy with effusion on the right side, and after 10 months in the State Tuberculosis Sanatorium was discharged with a poor prognosis because of infection in the left lung. Five months before tidal irrigation was started she was again admitted to the State Sanatorium with tuberculous empyema and a bronchial fistula. During all of the past 5 months she has coughed up about 12 sputum cups of pus each day. She lay flat on her back and was afraid to move because of the danger of starting a paroxysm of coughing.

She was admitted to the Johns Hopkins Hospital for surgical treatment in an exhausted condition. The temperature was 104° F., the pulse 190, and any movement would bring on a paroxysm of coughing. The face was flushed and cyanotic. The right chest was full of fluid and immobile, the liver was pushed down. The mediastinum was not displaced and was apparently fixed.

A No. 20 French catheter was inserted through a trocar in the 8th interspace in the anterior axillary line, and was connected with an aspiration apparatus so as to keep the cavity empty. The cough was relieved immediately. The temperature dropped to below 100° F. within two days and remained down as long as continuous aspiration was maintained and the cavity was flushed out frequently (Fig 5).

For four months this treatment was continued, and the patient improved steadily in strength, weight, and color, the hemoglobin rose from 58 per cent to 90 per cent, the temperature remained around normal, the pulse was between 90 and 100, and the cough was completely relieved. The amount of air leaking through the fistula decreased progressively, so that after three months suction could be obtained without causing dyspnoea. She had a great deal of trouble with painful and swollen joints, but the pain could be controlled with aspirin. These pains recurred periodically up to the time of the collapse of the chest.

On December 28, 1929, the first stage of an extrapleural paravertebral thorocoplasty was performed and large sections of the 4th through the 11th rib were removed. Primary healing of the wound was obtained.

Following operation there was a moderate elevation of temperature. On the 6th day after operation the bronchial fistula closed temporarily, and it has closed periodically since that time, so that suction can be more easily maintained and tidal irrigation can be carried on. Twelve days after operation the amount of pus draining from the cavity had diminished tremendously. The temperature then remained below 100° F. and usually below 99° F. until the next operation.

On January 30, 1930, an extrapleural paravertebral thoracoplasty, second stage, was done. Large segments of the upper three ribs were removed. Primary healing of the wound was obtained. Following operation there was a slight acceleration of the pulse but no elevation of temperature. There was still further diminution in the amount of pus coming from the empyema cavity, and the temperature remained below 99° F. for two weeks following operation. An attempt was then made to close the cavity by increasing the suction, but each time this was increased there was a temperature reaction and on one occasion a chill. Because of the presence of the bronchial fistula only normal salt solution had been used.

Most of the suction was then released, and the cavity was irrigated with acetic acid one per cent, Dakin's solution, and normal salt solution. The amount of air leaking through the fistula increased perceptibly, but neither the solution nor the chlorine gas could enter the bronchi because of this current of air. After two weeks there was an occasional small hemorrhage from the cavity. Suction was then increased at the rate of about 1 to 3 cm. each day until the water manometer reached 60 cm., at which point there was a barely perceptible reversal of the flow of fluid in the thoracotomy tube during the respiratory cycle. The mouth temperature remained at or below 98.6° F., the pulse 80 to 100, there was very little drainage, the fistula closed completely within a week, and the patient was feeling better than at any time since her admission to the hospital. It should be noted that there have been no joint pains since soon after the first stage of the thoracotomy. Two months and 10 days after the last operation only 12 c.c. of fluid could be forced into the cavity with moderate pressure that would force the tube out of the chest (Fig. 6).

Patient IV. Tuberculous pneumonia, right. Pleurisy with effusion, tuberculous (guinea pig inoculation). Bronchial fistula. Pleural cavity infected with staphylococcus aureus.

An 18 year old white boy had been ill for three months with a "lung cold" and pain in the right chest, with great loss of weight. A diagnosis of tuberculous pneumonia was made one month before admission. Since that time he had been delirious at intervals, and had had fever, cough, blood tinged sputum, rapid respiration, and pain in the right chest.

He was acutely ill on admission, and had pneumonia at the right base. An effusion developed (Fig. 7), the fluid from which was free of secondary infection, but tuberculosis was demonstrated by two separate injections of guinea pigs. Sputum culture showed a heavy growth of staphylococcus aureus, and blastomycetes were also present.

Fifteen days after admission the patient became perceptibly worse, and the temperature went higher and became more irregular. He vomited a large amount of sputum which he had apparently coughed up and

swallowed. This certainly seemed to indicate the opening of a bronchial fistula, which was later proved to be present. A thoracentesis gave a small amount of foul, orange-tinted creamy pus, which contained the staphylococcus aureus, the tubercle bacillus, and other organisms. Three days later and 18 days after admission a trocar thoracotomy was performed, and there was evidence of a bronchial fistula. Tidal irrigation with very little if any suction was instituted. There was some cough, which was relieved by applying a suction unit to draw a current of air through the fistula into the empyema cavity. This was entirely inadequate to eliminate air sufficiently rapidly to give negative pressure within the cavity.

When the patient was first seen by me on the 25th day after operation there was a large bronchial fistula. The cavity was thought to be thoroughly cleaned out so that it could be rapidly closed; the irrigation unit, therefore, was set for a maximum of 25 cm. of suction as recorded by a water manometer, and was connected with a water suction pump. Within 12 hours all leaking of air through the fistula stopped. There was slight leakage two days later when the interne for some unexplained reason changed the catheter in the chest, but this stopped when suction was reapplied. Thirteen days after efficient suction was applied irrigation had ceased entirely, six days later suction was discontinued, and two days after suction was discontinued the patient was up in a chair. Ten days after suction was discontinued and 29 days after efficient suction was first applied the tube was out and the sinus closed. As both the guinea pig inoculations were positive for tuberculosis, the patient was transferred to the medical service for further hospitalization. Two weeks later he was turned over to the out-patient tuberculosis clinic, and he has continued to improve while living at home under its supervision.

The chest is clear on physical examination, while the X-ray shows only the slightly thickened pleura (Fig. 8).

The essential points in the treatment of these cases are as follows:

1. General care of the tuberculous patient, which need not be discussed further here.

2. Irrigation and drainage. Drainage is free as long as the pus is removed as fast as it accumulates. Absorption from a granulating surface is decreased as the pressure on the surface is reduced. When the pus is removed from a cavity in which the pressure is kept below atmospheric pressure there is less absorption or, in other words, there is freer drainage than from a surface granulating wound of equal size. Continuous tidal irrigation, where it can be used, is the most satisfactory method of cleansing the cavity. This irrigation is most efficient when the excursion of the fluid in the thoracotomy tube is greatest and when a large amount of fresh solution is continually added to the system near the chest. Periodic irrigation must be carried on in the presence of a large bronchial fistula, and its efficiency is directly proportioned to the frequency of the irrigations and the amount of solution used. The most efficient drainage is therefore accomplished when the entire granulating surface is covered with and the secretions are removed by a clean solution, at a tension less than atmospheric pressure. The body

FIGURE 1

FIGURE 2

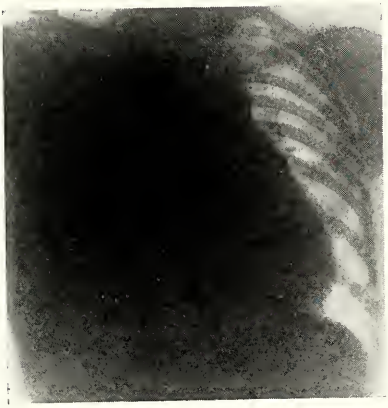

FIGURE 3

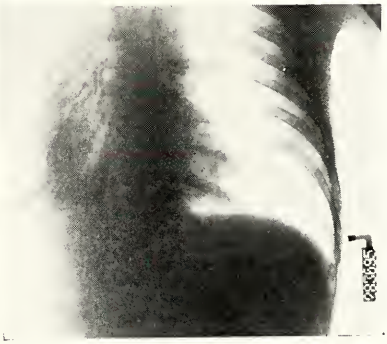

FIGURE 4

FIGURE 1. Patient 1—Complete pyopneumothorax, left side. Within 10 days after each of the 17 aspirations of about 1800 c.c. of pus, the fluid reaccumulated and displaced the heart and mediastinum very noticeably to the left.

FIGURE 2. Patient I—X-ray of the chest 3 months after the drainage tube was removed. The sinus closed within a month after removal of the tube, the temperature remained normal, and the patient is now apparently well.

FIGURE 3. Patient II—Tuberculous empyema of 5 months' duration secondarily infected with the staphylococcus aureus.

FIGURE 4. Patient II—X-ray of chest. Five months after a paravertebral thoracoplasty the cavity, which holds only 25 c.c., is shown injected with lipiodol.

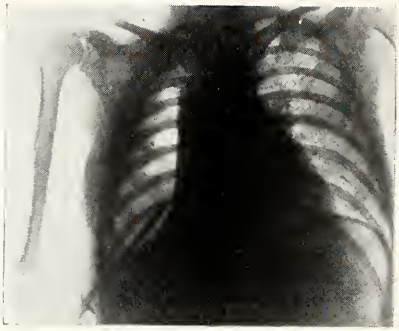

FIGURE 5

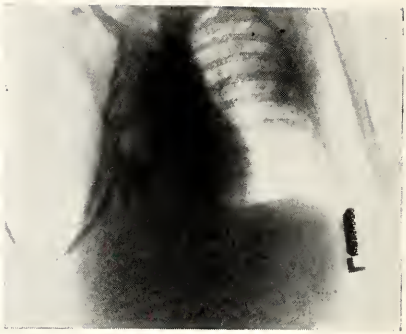

FIGURE 6

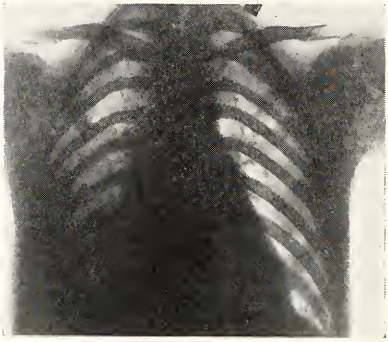

FIGURE 7

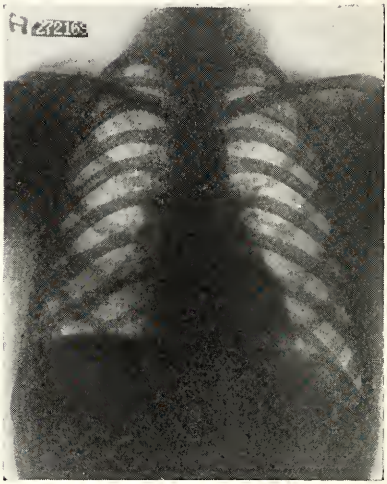

FIGURE 8

FIGURE 5. Patient III—Tuberculous empyema. The lung had been collapsed for 6 years, and a bronchial fistula and secondary infection had been present for 5 months. X-ray taken 2 days after the tube was inserted and continuous aspiration started.

FIGURE 6. Patient III—X-ray of chest 80 days after completion of the paravertebral thoracoplasty. The cavity, which is shown filled with lipiodol, holds only 10 c.c.

FIGURE 7. Patient IV—X-ray of chest showing a pleurisy with effusion. Tuberculosis was suspected and was proved by guinea pig inoculations. A bronchial fistula developed a few days later, and the cavity became secondarily infected.

FIGURE 8. Patient IV—X-ray of chest after removal of the thoracotomy tube. The cavity had been irrigated for 25 days, after which suction was applied. The fistula then closed within 12 hours, and all irrigation stopped within 2 weeks. Twenty-nine days after suction was applied the tube was out and the sinus had healed.

defenses will get rid of the acute infection below the surface provided free drainage is given. Drainage is not free after the surfaces are brought into apposition by suction. In an acute empyema the body defenses take care of the few organisms left following the mechanical cleansing of the cavity with normal salt solution. Where there is a poor blood supply as a result of scarring and fibrosis and even caseation, it is well to sterilize the surfaces if possible by chemical or other means. If at the same time the redundant granulations which harbor the infection are removed, not only is the sterilization more satisfactory but the remaining surfaces when brought into apposition are better prepared to grow together and obliterate the dead space. The gradual apposition of the surfaces by slow increase of suction is less apt to leave walled off infected foci than is the sudden approximation of large areas by rapid increase of suction. Where there is danger that a solution or the fumes from a solution may enter a bronchial fistula, only non-irritants should be used. Where this danger is not present we have used chiefly Dakin's solution, normal salt solution, and one to three per cent acetic acid. The salt solution is used to wash out the cavity after each of the other solutions has been used. It should also be used exclusively immediately after there has been a small hemorrhage or at any time, particularly at night, when there is no one to watch for bleeding. When the cavity is sterile, the surfaces are in apposition, and it is desirable to have conditions most favorable for healing, a non-irritating solution such as normal salt is indicated.

Before a collapsing operation has been done, suction should not be pushed if it causes a temporary reaction in the patient after the cavity has been thoroughly cleansed and its surfaces have been sterilized. The cavity should be cleansed and sterilized as thoroughly as possible before a thoracoplasty is performed, and the suction should be applied soon after the operation. This use of the maximal suction early after operation is essential in order to obtain the greatest possible collapse before the free ends of the ribs have been partly immobilized in scar tissue. For this same reason all stages of the thoracoplasty should be completed as rapidly as the condition of the patient will permit. If he has a persistent temperature reaction following the application of suction after the thoracoplasty, and if there is no infection in the wound or other focus to account for this elevation, the suction should be partly released to note its effect on the temperature curve, the cavity should again be cleansed and sterilized, the walls freshened, and suction reapplied slowly. The suction should never be so great as to prevent a slight reversal of the flow of fluid in the thoracotomy tube during inspiration. Greater suction will draw granulation tissue into the holes in the end of the tube, so that even if pus accumulates under pressure it cannot get into the tube. Under these conditions there will not only be no suction but no drainage unless the pus forces its way out around the tube.

3. Operation. The entire plan of operative treatment must be determined before a tube is inserted. Even the insertion of a needle through the chest wall in the region of the future thoracoplasty may leave an opening in the pleura through which fluid may extravasate, causing infection and an abscess in the operative region. When the

lung has been long collapsed one should assure himself of the possibility of resecting the ribs both in front and in the back. The tube should then be inserted low down in the anterior axillary line. The placing of the tube in a patient with a bronchial fistula has been described above in giving the plan of treatment in these cases.

The simplest method of fastening the tube in the chest is by the use of a rubber flange. Since this is not applied to prevent leakage, it need not be placed against the skin. A pad of gauze is placed beneath the flange, another layer over the flange, and adhesive strips are applied. This dressing stabilizes the tube, protects the skin, and can be easily removed since no adhesive is attached to the rubber. It is seldom necessary to change the dressings more often than every two to six weeks.

There is no indication to discuss here the collapsing operation except to emphasize the necessity of the most meticulous care of the skin in the operative region and careful cleansing and sterilization of this area of skin before operation. Precautions must also be taken to avoid contaminating the fresh operative wound by opening into the empyema cavity or by encroaching too closely on the region of the thoracotomy wound. Suction on the cavity should be maintained and irrigation should be free during and after operation so that there will be no leakage about the tube, with the resulting danger of contamination of the thoracoplasty wound.

The empyema cavity should be thoroughly cleansed and sterilized and the walls freshened before performing each stage of the thoracoplasty. This care permits the rapid application of suction after operation without bringing heavily infected surfaces together.

4. Postoperative Care. After the collapsing operations are complete the surfaces should not be held in apposition for more than a month at a time. If within this time they have not become adherent, suction should be reduced, the cavity again cleansed, sterilized, and freshened, and suction gradually applied.

After the cavity is obliterated a month should be allowed for the union to become sufficiently firm to prevent pus from again stripping the lung from the chest wall. The tube should then be gradually withdrawn over 7 to 14 days' time, while suction is still being applied.

5. After the cavity has healed the patient should be sent to a sanatorium for a continuation of the general treatment of the tuberculosis.

Results. Four patients have been treated. Two are well of the empyema. The other two, who are still under treatment, have cavities holding less than 15 c.c.

The two bronchial fistulae, one acute, the other of 5 months' duration in a lung which had been collapsed for 6 years, have closed.

DISCUSSION

Dr. P. P. McCain (Sanatorium): Tuberculous empyema is one of the most troublesome conditions that tuberculosis men have to treat. Fortunately, it is not very common. Usually it is the result of spontaneous pneumothorax, though occasionally a case of artificial pneumothorax develops fluid and becomes infected. Very rarely it develops from pleurisy with effusion. Usually it is the result of faulty technic in aspiration. The line of treatment to be followed depends very largely

on the condition of the underlying lung and also of the contralateral lung. If the other lung is in good condition, and if the lung on the diseased side is badly affected, there may be need of permanent collapse. It seems to me that Dr. Hart has described a treatment that is a distinct advance, and I think we are indebted to him for the fine work he has done. I was afraid his apparatus would be so complicated that it would not be practical in the average sanatorium or in the average general hospital and was also afraid it would be rather expensive, but he says there is practically nothing that is at all expensive and that, in fact, it is rather simple when it is understood. It seems to me that by his method you can certainly reduce in some cases the extent of the operation that is necessary. One case there, I believe, cleared up without any operation at all, and in all of the cases there was probably a cleaner operative field than there would have been otherwise.

Dr. Julian A. Moore (Asheville) : I wish to thank Dr. Hart for his paper. I am not familiar with the details of his method, so it appears to me a complicated method. It seems to me if one understood it he could apply it, and some day when he gets down to Duke University I am going to him and let him explain it to me.

I also wish to congratulate Dr. Hart on his courage in departing from the long established surgical maxim in empyema. If he can do in a large series of cases what he has done here he will have contributed much to the surgical treatment of tuberculous empyema. I must say I am skeptical, but if he can show it I shall adopt it.

The treatment of tuberculous empyema, to be rational, must be predicated upon the pathology of the lung underneath. I would condemn any surgical drainage of a pure tuberculous empyema. The pure tuberculous empyema is best treated in the early stages by aspiration and replacing with air. In a certain number of those cases that will heal the empyema, that is, the effusion will disappear. In some it will not. If after eight or ten such applications you have not gotten anywhere, I think the best chance of curing that empyema is an extrapleural paravertebral thoracoplasty without attempting to treat the empyema at all. The cavity will gradually close; the walls come together and heal. That is in cases where the pus is not thick but is mostly fluid. There is another class of cases in which the pus is thick and creamy, but in which you cannot demonstrate infection. That is the type of case in which you can do paravertebral thoracoplasty. In the experience of Archibald and others results have not been so good from this type of treatment.

In cases of mixed infection in empyema you have to drain, or your patient will die. In this type of cases Dr. Hart has demonstrated a new treatment. However, I think the success of that again depends upon whether it is of long standing or short standing. The longer standing these cases are, the thicker that pleura becomes. I have seen a pleura one-half inch thick, and that composed of fibrous tissue. I do not think by any method you can get that parietal tissue to shrink in or that lung to come out. I think in that case the best thing is to do a costotomy. If by that you cannot get that in, the best way is take off the parietal pleura and push the muscle and skin flap in.

I notice that in some of these cases Dr. Hart had from an inch to an inch and a half of rib left attached to the transverse process. I think if he will make an effort to leave the rib exactly attached to this transverse process he will get greater collapse and better result.

Dr. C. W. D. Colby (Asheville): Dr. Hart has certainly given us an original idea. Beginning where he left off and where Dr. McCain left off, we have to remember the contralateral lung. I remember a case in a girl of twenty-one, with advanced tuberculosis, whose lung had been depressed. Pus had been drawn off many times but continued to form. Remembering that tubercle bacilli do not occur in the presence of metallic silver, we injected into that cavity about three c.m. of very strong colloidal silver solution. That was done three times, and the formation of pus stopped, and the wound began to heal. At the last examination the patient was doing nicely, and she is now taking a course in business. If in doing pulmonary surgery we could use metallic silver in some form, probably we would not have pus to bother with.

Dr. Hart (closing the discussion): In regard to the type of apparatus we use, in an acute empyema we do not have a complicated apparatus; we have a very simple apparatus. In tuberculous empyema we have a complicated condition and a somewhat more complicated apparatus. We have a drip mechanism to add water; we have a suction pump; we have a trap in between to catch the pus as it comes out, a method for measuring the amount of suction, and a vent to allow air to enter. I feel that it is a good deal less complicated than the traction apparatus which is used for fracture of the femur, which is, of course, the accepted method of treating fractured femur. I find less trouble in adjusting this than in adjusting traction treatment. As to keeping it going, the nurse has instructions to keep the drip going at one end and to keep the pus and water at the other end emptied out, and with this and an occasional adjustment by the physician it goes on day after day with no trouble.

In regard to the pure tuberculous empyema, I myself would condemn any open drainage of a tuberculous empyema that is not infected. I might say the first case I had was a tuberculous empyema which was not infected. I was to a certain extent forced into it; I had a great hesitancy in inserting the tube. In the tuberculosis sanatorium they felt the patient was not making any progress. They had to aspirate his chest at least every ten days and got as much as 18 c.c. of fluid every ten days, and the pus continued to form. He got so dyspneic that they had to aspirate. So on their recommendation we proceeded to try it in this case. The pus was thick and creamy and accumulated quite rapidly.

As to the thickened pleura, I feel only a trial will help. As we all know, the amount of force which we can obtain by the use of a hydraulic pump is tremendous. I have seen that illustrated recently in Italy and also in Georgia, where they quarry stone. If they can do that with a hydraulic pump, a suction pump will do the same thing in a cavity. In other words, if you put five ———— of water suction through a tube to the inside of the cavity, that amount of suction is applied to every square centimeter of the entire surface; and there is no limit to the amount of suction you can put on except the amount of pain it causes the patient.

In regard to the transverse process, we got off as much of the ribs as we could. In the upper ribs, some of the ribs projected out farther than they should have, but our operative technic was not perfected. At the second stage we extended the operation downward and took off more of the rib. The lower the incision, the more of the rib we could get off. In some of these cases in the second stage of the operation these short pieces of rib were taken off.

CERVICAL INFECTION AS A CAUSE OF PELVIC PATHOLOGY

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For centuries women have suffered with leucorrhea, disturbances in menstruation, backache and sterility, the cause of which in many unsolved cases could have been found in the cervix uteri.

This organ is constantly bathed in a secretion loaded with thousands of various bacteria and its structure is one which invites infection and its deep-seated torturous glands encourage a permanent habitat. If the disease produced by the infection of these glands terminated in local pathology only, the necessity for prophylactic and early curative treatment might not be so imperative. But the local disease is a source of more serious pathology of the female reproductive system.

In order to properly understand the pathology produced by cervical infections it is necessary to be familiar with the microscopic anatomy of the uterus and associated pelvic organs. The body of the uterus is made up of three layers of longitudinal and circular muscle, while the cervix contains only one thin layer of circular fibers. The corporeal endometrium is smooth, contains small shallow glands, is covered by ciliated cuboidal epithelium and possesses a characteristic immunity to infection. (Curtiss-Cullen.)

"The so-called chronic endometritis and hypertrophic endometritis are not infections of the uterine body but the former is the round cell infiltration of the transudative stage of the menstrual cycle and the latter a functional adenomatous over-growth of glandular hyperplasia like Graves Disease of the Thyroid."

The cervix in contrast to the corpus is lined by mucous membrane which is thrown into folds radiating from the median raphe and covered by ciliated columnar epithelium. At the internal os there is transition from columnar to cuboidal and the external os from columnar to squamous epithelium, the latter covering the vaginal portion and vagina. Both of these transition points are important.

The cervical mucous membrane, unlike the corporeal, contains many deep penetrating racemose glands which normally secrete a clear alkaline mucous that plugs the cervical canal and protects the sterile uterine cavity. These glands are not immune to infection but on the contrary show a high susceptibility with a tendency to chronicity.

The lymphatics of the uterus play a very important part in the end results of cervical infections for it is through these channels that the

bacteria pass to the fundus, the fallopian tubes, the ovaries, the parametrium and the posterior cellular space about the utero-sacral ligaments. "The lymphatics take origin in the small hollow (lacuna) spaces of the cervix, pass through the fine openings (ostia) into the myometrium to form a capillary network on the sheath of connective tissue (Perimysium) that surrounds each bundle and fasicle of uterine muscle. Thence they go to the sub-peritoneal (perimetrial) space where they collect in two main channels that follow the uterine and ovarian blood vessels along the base of the broad ligaments. Lymphatic channels also pass outward beneath the fallopian tubes and up along the ureters to the kidneys." (Sturmdorf.) It is this normal lymphatic distribution that greatly determines the extent of cervical infection. Salpingitis, an associated disease, is not merely an ascending infection by continuity of tissue along the uterine mucosa and fallopian tube but is a metastatic infection up the lymph channels. The ascending lymphangitis infiltrates the myometrial muscle sheaths, and impairs uterine contractions, thence it travels in the peri-adenexal lymphatics kinking the tubes and sealing the fimbria. Finally the infection reaches the ovaries, entering the hilus through the lymphatics, thickening the capsular tunic, impairing the normal rupture of the graafian follicles with ultimate development of retention cysts.

According to Mathews the infection reaching the uterine body invites subinvolution which factor increases susceptibility to infection whether it be latent or freshly acquired.

"The posterior cellulitis causes backache before and during menstruation. It is a cause of deep-seated painful coitus and can be demonstrated by lifting the cervix during digital examination. The pull of the heavy fundus and cervix on the thick tender utero sacral ligaments causes lumbo sacral pain." (Mathews.)

The symptoms and pathology of chronic endocervicitis varies with the type and virulence of the infection and the individual resistance of the patient. The infection may remain local in the glands of the cervix or quickly metastesize to the uterus and adenexa producing uterine fibrosis, pelvic cellulitis, hydro or pyo-salpinx ovarian sclerosis and cyst formation, pelvic cellulitis and tubo-ovarian cysts.

The removal of the adenexal pathology in these cases does not relieve the cause but often mutilates the patients. Certainly the curette will not remove the infections in the racemose glands of the cervix or in the lymphatics of the uterus; it merely removes an innocent endometrium and may carry infection from the cervix to the uterus, tubes and parametria.

The most common gross pathological condition about the cervix is the so-called erosion. The term suggests ulceration or solution in continuity of tissue and is therefore a misnomer for the surface has an intact epithelium covering. The free bleeding is due to the friability of the thin epithelial layer. The erosion is the result of infection gaining entrance to the deep cervical glands through injury or laceration to the cervix during labor or operative instrumentation, such as forcible or quick dilitation. The constant stimulation of infection produces a swollen cervical mucosa which pushes itself out on the portio so that

the soft columnar epithelium actually replaces the normal squamous. As the disease progresses the cervical tissue hypertrophies, cysts are formed and later on squamous epithelium proliferates to replace the columnar and occlude the cervical glands. This occlusion results in the formation of Nabothian cysts which is a positive sign of chronic endocervicitis.

The histological steps are:

1. Loss of squamous epithelial covering (true erosion), due to irritation.
2. Proliferation and covering with columnar epithelium.
3. Down growth of glands from the new mucosa.
4. Lessening of the irritation and gradual replacement by squamous epithelium occluding gland ducts.

Erosion—two forms (1) Congenital. (2) Inflammatory.

It is but a short step from glandular overgrowth and cervical hyperplasia to the disorderly arrangement of embryonal cells seen in cancer. (Mathew.) This is encouraged by the fact that there is a normal transition of epithelium at this point.

Ewing states that erosion is the most definitely established lesion known to initiate cervical cancer and that chronic, catarrhal endocervicitis preceeds it in a great majority of cases.

Polese reported 34 out of 48 cases of cervical cancer with preceding erosion, while De Lee states that no cancer has occurred in his practice for twenty years in crevices that were repaired at labor.

Bailey of Manchester, England, has just made a very exhaustive study of cervical erosion, and concludes that it is a part of cervical irritation, a constant forerunner of cancer.

The treatment of cervical infection may be divided into:

1. Prevention.
2. Eradication of the source of infection.
3. Removal of the pathology, the result of the endocervicitis.

Prevention should begin in infancy with the prompt removal of soiled diapers. Protection against exanthemata and protracted diarrheas. Later, the control of venereal disease, premarital examination and treatment. Reduction in the frequency of abortions and uterine instrumentation, especially quick and forcible dilitation of the cervix. Repair at labor of all cervical as well as perineal lacerations. Immediate and thorough treatment of all cervical erosions.

The eradication of the source of the infection has been a difficult problem, there being no single treatment that offers complete success. Many operations devised have failed mainly for two reasons—the failure to remove the infection and the failure to reline the cervical canal with healthy tissue. Often the fact has been lost sight of that infection is the cause of the leucorrhea and disease, and not the laceration or cervical injury.

Eradication of infection in the majority of cervices is best accomplished by cauterization, while others require complete removal of the endocervix (Sturmdorf Tracheloplasty) or amputation and a few need only simple trachelorrplasty to restore them to a healthy condition. We must remember that these treatments, however, only arrest the disease

in the cervix and cure the leucorrhea. They do not open the tubes, separate pelvic adhesions, cure sclerotic and cystic ovaries or inflammatory condition of the pelvic cellular tissues. These require specific treatment for themselves.

Why is it our cervical medication such as Boro-glyceride, saturated magnesium sulphate, iodine and mercurochrome do not relieve the condition? They do help some patients but the location of the infection in the deep-seated glands and the barrier of thick tenacious mucous prevents the drug reaching the bacteria. Gonococci, streptococci and staphlococci are usually the offending organisms.

The instrument best suited for cauterization is the flat tip nasal cautery. The flat blade post cautery may be employed but cannot be used high in the canal because its surface is too extensively heated. Between each cut of the cautery knife there must be left an area of untouched tissue; this is especially true when cauterizing within the canal, otherwise tenosis may develop.

The usual cervix seen post-partum with slight erosion, eversion and infection can be healed with two or three treatments three to four weeks apart. The anterior and posterior lips of the cervix are both cut with three or four strokes of the cautery blade three to five millimeters deep and eight to ten millimeters apart. The surface is then painted with mercurochrome and the patient is allowed to go home. This treatment is given in the office without anesthesia. The patient is advised that there will be an increase in discharge with moderate bleeding for one or two weeks. This bleeding is due to sloughing while that before treatment is due to friability of the thin epithelial covering. Sometimes a vaginitis is set up by the irritating discharge and this may be relieved by a warm bicarbonate of soda douche every few days or by the direct application of mercurochrome to the vaginal walls.

In more extensive cervical infection deep cuts with the cautery blade are necessary. If the cervix is unlacerated a crucial incision is made and then five to ten radical incisions (shallow) like the spokes of a wheel. This requires anesthesia and is followed by some parametrial reaction. The patient should therefore remain in bed four or five days. Bleeding and discharge may be excessive about the tenth day when sloughing occurs. Menstruation will probably be heavy for two periods and the discharge continue for eight to twelve weeks.

Simple erosion, due to laceration, is treated by removing the scar tissue and approximating the raw edges.

The lacerated cervix with long standing deep-seated infection and Nabothian cyst cannot be satisfactorily treated with the cautery and necessitates removal of the infection by operation. The only operation in our opinion that meets the requirements of eradicating the infection and relining the cervical canal is the Sturmdorf tracheloplasty.

Technique is as follows: A circular incision is made about the cervix through the vaginal sheath at the demarcating line between the healthy and diseased tissue. The sheath is then separated high up on the cervix and the cone-shaped mass of endocervical tissue up to the internal os is removed. The inverting sutures of Sturmdorff are inserted in the anterior and posterior flaps and two hemostatic sutures on either side.

Cervices with bilateral or stellate laceration, eversion, erosion, hypertrophy and cystic degeneration should be amputated because the infection is so deep-seated and the entire organ so completely involved in pathological changes that a cure cannot otherwise be accomplished.

The removal of pathology, the result of chronic endocervicitis includes the treatment of pelvic inflammatory disease in all its forms and time does not permit a discussion of it in this paper.

REPORT OF 70 CASES

Chief Complaint:

Leucorrhea in 38 or 53%.
Pain in 14 or 20%.
Disturbed menstruation 12 or 17% (metrorrhagia-menorrhagia).
Nervousness and headache 6 or 9%.

Findings:

Laceration and erosion 56 or 80%.
Hypertrophy and cystic degeneration 19 or 27%.
Pelvic inflammation 14 or 20% (first, second and third degrees).
Simple laceration 10 or 16%.
Cervicitis 6 or 9%.
Cystic ovaries 10 or 16%.

Treatment:

Cautery 44, Cure or improvement 93%.
Sturmdorff Tracheloplasty 7. Cure or improvement 100%.
Trachelorrhaphy 10. Cure or improvement 90%.
Amputation or Panhysterectomy 9. Cure or improvement 100%.

In conclusion, infections of the cervix gain entrance through lack of personal hygiene or traumatic injury. The disease begins slowly insidiously and apparently as a simple harmless affair. It shows but little tendency to self healing but becomes deep-seated, chronic and metastasize unless treated early and thoroughly. There is erosion, eversion, cervical hypertrophy and cystic degeneration with the ultimate sequel of cancer. An ascending lymphangitis results in subinvolution, salpingitis, sealing of the tubes, ovarian sclerosis and retention cysts plus adhesive pelvic peritonitis and cellulitis.

Treatment should consist mainly of prevention, early eradication by cauterization and Sturmdorf amputation.

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REPORT OF A SERIES OF BACK INJURIES

R. D. Pearson, M.D., Monroe, N. C.

The subject of back injuries is a rather large one, and is one discussed a great deal, and rightly so because of the many important features associated therewith. The broken back is much more common since the automobile has become so generally used, and many cases have resulted directly from over indulgence in whiskey. Five of the cases which this paper covers could be attributed to automobile accidents in combination with alcoholism.

I shall not attempt to cover the subject of back injury from the anatomic, pathologic, nor therapeutic viewpoints.

We all know that fracture or fracture-dislocation of the spine with pathology enough to give symptoms of cord pressure or nerve injury is one of serious perspective. This paper will not deal with the evident cases which show much deformity—which have developed signs and symptoms of paralysis. In times past every broken back, in the majority of cases, meant paralysis, invalidism or death. This was due to all diagnoses being made from physical findings and cases without definite clinical evidence of a fractured spine, and were probably classified as a sprained back, and likewise today in many cases.

Since the advent of the X-ray a certain means of diagnosis has been put in our hands and we are able to detect through it, those cases which do not show positive clinical evidence.

We are prone to consider many of the cases of injured backs as being sprained, adhesive straps applied and the patient discharged. Our guess will be right in the majority of cases. But we should endeavor to be positive. I should like to emphasize the importance of X-raying in both the antero-posterior and lateral planes every case of back injury where pain justifies an X-ray study. I should like to emphasize too that because a patient walks into your office who has had a back injury —that does not necessarily mean that he does not have a broken back. At times a patient has many injuries and the apparently major wounds and injuries are really the minor ones. May I cite a case to illustrate this? A woman of 24 years was injured in an automobile accident and on admission we found her semi-conscious. She had a depressed fracture of the skull, fractured left clavicle, many lacerations. In a few days consciousness returned and she complained with moderate degree

of pain in back. There was a tenderness present in the mid-part of dorsal spine. X-ray was made and we found the eighth dorsal vertebra to have a crushed body. This case did not show any deformity nor any signs of cord pressure.

During the past two and a half years we have had a number of cases of fractured and fracture-dislocation spines. Of the series ten of them showed but little if any signs of pressure. This proved of much interest to us.

It has been our practice to make both antero posterior and lateral radiograms in all cases of back injury. Through the lateral exposure we have detected the fractured spine where an antero posterior view was not always conclusive or did not give us the desired information.

The spinal column has natural physiological curves, and if a satisfactory antero posterior plate be taken due consideration should be paid to these curves, taken in a plane to demonstrate as much of each vertebra as possible. Unless this be done there is a tendency towards superimposition of the vertebral shadows and this defeats a correct reading. In the lateral placement—a profile view is obtained and much additional and necessary information is thereby obtained to enable us to satisfactorily treat the case. I realize that the foregoing is one of common knowledge, but to my knowledge it is not in common practice. I am attempting to stress the importance of X-raying all cases of injured back in the antero posterior and in the lateral position. Why? The unrecognized fractured spine is more than likely to give much trouble in weeks or months after the accident. Post Traumatic Spondylitis can be prevented if proper treatment is instituted early. Unless a spine support be applied, nature is not going to be able to institute a normal healing process. Instead we are confronted with the patient suffering in the back—a deformity, etc. He is unable to do any heavy work—he has a weak back.

Since the institution of the state compensation insurance law we are more than ever pledged in justice to all, to make a correct diagnosis. A sprained back and a fractured back are not the same, and compensation varies with the disability reported. No physician is going to be negligent intentionally. It is for the good of the patient that we stress the above.

SUMMARY

The fractured spine is not a rarity.

Beware of the diagnosis of sprained back until proved so.

X-ray all suspicious cases in the antero posterior and latera planes.

Do not disregard a painful back when associated injuries appear to be of major importance.

Institute proper treatment early and prevent a Post Traumatic Spondylitis.

PROSTATIC CALCULI
(With Report of a Case)

Claude B. Squires, M.D., F.A.C.S., Charlotte, N. C.
(Read by Permission by A. J. Crowell)

The records of the Crowell Clinic show that in the past ten years there have been twenty-two cases of prostatic concretion presenting

themselves for examination and treatment. Of these twenty-two, twenty were true prostatic calculi and two were the so-called false prostatic calculi, in which the stones were lodged in the prostatic urethra. One of these was an enormous stone being about the size of a medium sized orange and the other was a stone about the size of a butter bean.

We use the term true prostatic calculus in preference to primary prostatic calculus and false prostatic calculus in preference to the term secondary prostatic calculus. The true or primary prostatic calculus is formed within the substance of the prostrate gland; the false or secondary prostatic calculus is lodged in the prostatic urethra as a result of an escape from the kidney or bladder, or in some instances, forms in the prostatic urethra following an injury.

The youngest patient in this series of cases was forty-eight and the oldest seventy-three years of age.

Of these twenty-two cases, the two in which the calculus was lodged in the prostatic urethra, the calculus was removed without prostatectomy. In one other case, which was complicated by multiple urethral strictures of small caliber, the gland was not removed but the urethra was dilated up for a period extending over several years. The calculi gave no marked symptoms and were diagnosed by X-ray. They could also be felt by the palpating finger in the rectum.

In two instances the patients did not return for treatment and in the other seventeen, perineal prostatectomy was done.

The symptomatology is that of hypertrophy of the prostate gland, plus vesical calculus. There is usually a frequency of urination, hesitancy, diminished force and a tenesmus at the end of urination. In a few instances in this group of cases the symptoms were exaggerated.

The number of cases of prostatic calculus in recent years has increased considerably due to the fact that they are now recognized more easily in roentgenograms and also due to the fact that in recent years more glands have passed through the hands of the clinical pathologist who has discovered a large number of these small calculi which were formerly overlooked.

Thomas and Robert (1) in reviewing three hundred and five cases of prostatic calculi, gave the following summary, which is generally accepted in prostatic calculi:

1. Prostatic calculi have ceased to be a clinical rarity, and are of much commoner occurrence than the number of cases reported.
2. The etiology of true prostatic calculi is still hypothetical.
3. True calculi, whether septic or aseptic, have as a nucleus the corpora amylacea, which are albuminoid or nitrogenous-like bodies.
4. True prostatic calculi are usually multiple and millet seed to pea size.
5. They are commonest in middle and late life and associated with other pathological conditions.
6. About 65 per cent are symptomless and are found accidentally during routine X-ray or at operations on the prostate.
7. A persistent and rebellious prostate should arouse suspicion of calculi.

8. Serious sequelae are rare, such as abscess, gangrene, etc.
9. Diagnosis from malignancy and inflammatory nodules can be made in almost 100 per cent of cases by means of roentgenograms. Phleboliths must be taken into consideration.
10. Surgical intervention by the perineal route is the treatment of choice, except in those cases where the calculus communicates with the urethra, when it may be removed urethroscopically.

Because of its unusual interest, we are presenting the following case report:

Case No. 23581, W. H. C., age 56, entered the Crowell Clinic September 26, 1929, complaining of frequency of urination, burning on urination and tenesmus at the end of micturition.

Family history was negative for tuberculosis or cancer.

Past history—usual diseases of childhood, no complications; no history of gonorrhea or syphilis; always well; had a bilateral herniorrhapy two years previous to admission.

Present illness dated back to September 1927 when patient gradually developed undue frequency of urination which was most marked at night; urination was also quite painful and there was considerable tenesmus at the end of the act. These symptoms gradually became more pronounced. During this period of two years the patient passed two small calculi. Erections were painful and he had had several attacks of hematuria.

Examination showed a well developed, well nourished adult male, apparently not suffering with any acute pain and apparently comfortable with the exception of considerable pain and tenesmus micturition.

Cystoscopy—There was no difficulty in passing the cystoscope except for a tightness in the posterio urethra; there was about two ounces of residual urine; the bladder capacity was normal; bladder mucosa showed a second degree cystitis and there was one small stone in the bladder. The ureteral openings were normal in location, size and appearance. There was an apparent moderate enlargement of the prostate gland with a very pronounced inverted "V" at the vesical neck.

Rectal examination revealed an indurated and nodular prostate gland. Prostate was very sensitive to the palpating finger in the rectum.

X-ray examination revealed a large group of stones in the prostate with a stone about the size of a pea in the bladder.

Treatment—Prostatectomy was advised and this was done after the usual preparation.

Our pathologist reported as follows:

Small gland with multiple prostatic calculi and innumerable corpora amylacea.

Chronic interstitial prostatitis.

X-ray picture made one month after operation showed absence of stones in the prostatic region and urinary bladder.

The first slide shows the calcareous changes in the prostate gland and the second shows the calculi after removal.

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SURGICAL TREATMENT OF BURNS

T. M. Green, M.D., Wilmington

For many years the treatment of burns has been shrouded in the mysteries of empyricisms, to the extent that almost every medicament has been advocated for treatment with but slight improvement in the mortality rate, deformity, or length of disability. This is indeed so true that we are in the habit of positively asserting the outcome at the first inspection, depending upon the extent of body surface involved and the depth of the burn.

Recently, however, it seems probable that this fatal attitude of predestination and pessimism will be replaced with a spirit of optimism through a better understanding of the underlying pathology.

There is a most striking resemblance between traumatic wounds and those produced by the extremes of heat and cold, both in their local and general changes.

LOCAL CHANGES

Burns are	Inflammation
1. Erythema (1st degree)	1. Congestion
2. Blistering (2nd degree)	2. Exudation
3. Suppuration	3. Suppuration
4. Charring (3rd degree)	4. Death of tissue
5. Cicatrization	5. Repair

SECONDARY CHANGES

In both are (1) shock, primary and secondary and (2) the result of infection.

Primary shock is that peculiar phenomenon, so wonderfully described by Crile, which follows (1) painful injuries to sensory nerves, (2) shifting of body fluids, (3) abnormal irradiation of body heat.

The exposure over large areas of sensory nerve endings of the skin and their irritation by air and dressings are responsible for the high degree of occurrence of primary wound shock in burns. Because of its frequency and intensity the mortality from primary wound shock in burns far exceeds that which occurs in any type of traumatic wounds. Underhill first described the rapid concentration of the blood following extensive superficial burns. The hemoglobin may thus be increased over normal to 130% to 240%. He also found a similar condition occurring in soldiers after exposure to lethal gases. Cannon noted the same thing occurring in shock following extensive gun shot wounds.

It may seem a little far fetched to find any similarity in the reaction in the primary wound shock of these varient conditions, i.e., burns, pulmonary oedema and traumatic wounds and yet upon careful analysis all these causative factors lead to an extreme reaction if inflamamtion and destruction of tissue result. This inflammatory reaction meets a response upon the part of the body in only one way, the way in which nature always responds, by exudation or shifting of body fluids to the part which is injured.

The enormous loss of fluids from the blood in burns, in edema of the lungs or in traumatic wounds brings about the concentration of the

blood. Neither man nor animal can long survive a concentration of 140, indeed the maintenance of life at a concentration of 125% becomes a precarious thing.

The third cause of primary wound shock in burns is due to the rapid loss of body heat through the loss of a large area of insulating covering (the skin). This was also found to be a significant causative factor in primary wound shock in war wounds by both American and English surgeons in the late war, i.e., loss of body heat.

SYMPTOMS

The clinical symptoms of *primary* wound shock, the so-called apathetic shock are similar in burns to those produced by trauma. These you are familiar with, rapid running pulse, low blood pressure, subnormal temperature, cold clammy, cyanotic skin, half closed eyes with dilated, lustrous pupils and loss of sphincter control. Death from this sort of shock usually occurs within the first three hours following burns. Other immediate causes of death are hemorrhage or embolism from immediate damage to large vessels. All of this occurs in traumatic wound shock also. *Secondary* wound shock or erethistic shock occurs about six hours later and in addition to the above symptoms there is added marked excitement, restlessness, and delirium. This type of shock was first described by Stewart and has been since confirmed by many others. He called it toxic shock and gave the name histamin to the toxic substance which caused it. Histamin can be demonstrated in traumatized tissue constantly in greater or less degree. This same condition of shock may be seen in burns, due to a histamin-like substance produced by burning the tissue and liberaitng toxic proteins. *Infections* in all traumatic wounds come either from the traumatizing agent, the victim's clothings or the dressings applied. It has been shown that infection will cover an entire wound in from eight to twenty-four hours.

In the case of burns the traumatizing agent is sterile; the victim's clothes are usually rendered sterile by burning; and yet the degree of infection following burns far exceeds that of any type of traumatic wounds. What a sad commentary upon the weakness of our methods of handling burns for it follows then that the infection is brought to the victims of burns by the doctor and his methods. Who among you would have the nerve to dress a traumatic wound with carron oil, non-sterile or ointments, whose chief virtue consists of their pleasing odor?

Is it not true that these two types of wounds have not only similar local reaction, but general reaction also? Therefore we should have a common ground for consideration of treatment.

TREATMENT

Immediate Local Treatment. It is imperative that the immediate local treatment does not contaminate the wound. The dressing should not only be sterile, but the technique should be similar to that given other wounds. The fact that so many sensory nerve endings are exposed practically prohibits the use of most of the germicides since the pain and irritation of their application further increases the primary wound shock. It is also remembered that the sensory nerve endings are ex-

posed to air and must be covered with some protective. The area of burn has lost its insulated covering, the skin, and must be covered with some insulation to prevent the irradiation of body heat. The application of harsh dressings that must be repeatedly changed must be eliminated and last the dressing must prevent the loss of body fluids and concentration of the blood.

The importance of the primary local treatment is paramount since upon it depends not only the immediate outcome, but also the future course of the wound, that is whether it is to be surgically clean or infected.

Immediate General Treatment. The immediate general treatment in the first period is more vital in determining the mortality than in the later stages. The concentration of the blood at once suggests the introduction of fluids by mouth, rectum, vein and subcutaneously in order, not only to combat blood concentration, but to dilute toxines and accelerate elimination as well. From 2,000 to 4,000 cc. daily is the average.

Subsequent Local Treatment. If the patient survives the primary period of shock, a matter of twenty-four to forty-eight hours, we turn our efforts then to the problem of secondary or erethictic shock. Since this is due to the absorption of a histamin like substance in the burned tissue it is proportionate to (1) the amount of burned tissue, (2) to the drainge from the burned tissue and (3) to the length of time the burned tissue remains on the wound. It has repeatedly been advocated that this necrotic mass be removed mechanically, as has been done in traumatic wounds, in order to avoid the erethistic or toxic shock from absorption of histamin or histamin-like substance. Such procedure must be done within the primary shock period and requires a general anesthetic to the degree of general narcosis. Enthusiasm for such treatment is fast dying out, especially since Davidson found that the toxic proteins were precipitated and rendered inert and non-absorbable by picric and phosphotingstic acid. However, these two substances themselves produce toxemia if used in sufficient strength to be of avail. He found that tannic acid accomplished the same thing in fresh solution and this coat of precipitation proteins on the surface provided a protective pad against chemical, bacterial and mechanical actions as well as against sensory and inflammatory irritation. An aqueous, 5% solution, freshly prepared and sprayed on every two hours after cleaning the skin with an alcohol sponge and removing the blisters. The patient to be in a tent bed and surrounded by a heat air (95 to 100 F.). No dressings are applied, but sterile sheets should be used and changed when indicated, certainly not less than once daily and fluids given freely. Thus it would seem that what in the past has been the most difficult factor to control, namely, the dead devitalized tissue with its toxic proteins can be entirely eliminated by a simple procedure. Incidently all the other indications for treatment (locally are answered), i.e., preservation of the sterility of the wound, minimizing pain caused by exposure of the nerve endings, air or repeated dressings, preventing undue irradiation of body heat by insulating the burned area and to a large extent the loss of body fluids by preventing lymphatic transudation and extensive tissue discharge.

After a few applications with the spray the burned surface assumes a black tanned leather appearance and great comfort is experienced by the patient. This tough, dry, non-absorbing pad of tanned devitilized tissue allows an ideal condition under which the new epithelium grows and can be clipped away as it gradually becomes detached at its edges. The complete removal requires from ten to twenty days in first and second degree. The epithelium will be found completely reformed without suppuration. In deeper burns a good clean healthy bed of granulation will be found ready for the application of some form of skin grafts.

SUMMARY

The same factors, shock, necrotic tissue and infection are present in burns as in traumatic wounds and therefore the same principals are applied in their treatment as have been found to be of such practical value in the treatment of wounds produced by mechanical agents.

Treatment of shock—primary, (a) by relief of pain, (b) restoring fluid balance, (c) protection against irradition of body heat are common to both burns and mechanical wounds. Prevention of erethistic shock is common to both. Controlled in mechanical wounds by debrisment, in burns by a far simpler method, i.e., by tanning it.

This treatment seems to have resulted in a definite decrease in the immediate deaths from burns as a result of primary and secondary wound shock and has decreased the amount of scar tissue and contraction through control of infection. The primary loss of tissue no treatment will influence, but the control of primary and secondary shock, the duration of the healing process and prevention of infection appears to be more certainly under the control of the surgeon by this method than by any other known procedure. It would seem therefore to more nearly reach the ideal.

DISCUSSION

Dr. T. C. Bost (Charlotte): Dr. Green has given a very instructive and comprehensive paper on the treatment of burns and has so thoroughly covered the subject that I have very little to do other than to emphasize some of the things he brought out. When we consider that the effect of heat on tissues has been known for so long a time it is rather an interesting fact that there has been no outstanding advancement in the treatment of burns in comparatively recent years. I know of no condition in which there is such a multiplicity of remedies as in the treatment of burns, all of which means that none of the agents heretofore used has been entirely satisfactory and there has been a constant attempt to find something more satisfactory. In the use of tannic acid, as Dr. Green has so well explained, we have an agent that is a very material advance in the treatment of burns. As you all know, tannic acid is an antidote for alkali poisons; and, as Dr. Green has so well explained, when the solution is applied to burned surfaces it precipitates the toxins incident to burns and prevents their absorption. I think it is a reflection on the medical profession that, when we are able to take a case that is severely burned and get that patient over his shock, then that patient will succumb to the toxemia from his burns. That is

just what tannic acid does; it minimizes the amount of toxemia and unquestionably is saving some cases that otherwise would not be saved. In these cases, of course, there is great loss of fluids and fall in temperature, all of which has to be combated. That is just a question of applying the ordinary methods for the treatment of shock and supplying fluids. When we consider that it is absolutely impossible in a fresh burn to tell how deep that burn goes, we can readily see how impossible it would be to excise the dead and dying tissue, to say nothing of excising more tissue and removing islands of skin that might live. In the non-use of tannic acid and along with this general surgical treatment it is, of course, necessary to use a general anesthetic. Now, tannic acid does all of this. It performs a natural debriement of the wound, provides a covering for the wound and in course of times does this natural debriement and acts as an anesthetic, all without shock.

Dr. J. T. Burrus (High Point): Perhaps no paper has been presented to this meeting that is more important than the subject presented by Dr. Green. I live in an industrial community, a community that has a great number of veneering plants. As you know, these veneering mills have very large vats. The logs are thrown into the vats, which are covered and then live steam thrown into them, and the temperature is raised very high. Then the cover is removed and the vat is allowed to cool gradually to a certain degree, when the logs are removed. It is just at this time, when the laborer is extracting the logs, that we get so many terrific and fatal burns, Dr. Green.

Burns are surgical and should be treated by the surgeon. I want to commend Dr. Green's tannic idea and the tannic acid treatment in the case of all burns. I believe that the men who have pursued this line of treatment are able to report a very satisfactory result. I have been through all of the different ideas for treating burns—through the old days of all the salves and all the oils and all the dressings and all the concoctions that could be thought of by all the different medical men and all the different pharmaceutical houses. This I am sure far surpasses any.

There is one thought that I would like to leave with you, or rather emphasize, in discussing this paper, and that is the leaving of the wound open. With us, we cradle these wounds, Dr. Green; and then we cover this cradle with sometimes canvas or sometimes oilcloth, so as to maintain body heat, and then sometimes suspend under that canvas a lamp that will help to raise the temperature and help to dry up secretions and help along the effect of the tannic acid. I commend that to you.

I was hoping Dr. Green would show some lantern slides of some of the terrific burns of half the body surface or more and tell us how to get these cases well. I do not know of any treatment by anybody disproving that old maxim, that if one-half or more of the body surface is burned, whether superficially or deep, that case will be a fatality. I am very anxious to find someone to tell me how we can save some of these cases.

Another thing I should like to emphasize is the introduction of plenty of fluids into the body; intravenous medication, plenty of saline and plenty of glucose right into the vein, in these people I believe is

worth a great deal. We have been able to save lives in this way that I am sure we would otherwise have lost.

Another emphasis of what Dr. Green has said—that is, as quickly as possible, as quickly as you can find the line of demarcation of dead tissue, whether it is skin or whether it is fascia, get it away, get it off. Dr. Bost has said well and wisely that it is not often we are to be reflected upon in the loss of a burned case when we treat it primarily, but I believe when we lose these cases as the result of a secondary infection in burns the medical profession or the medical man should have a certain amount of chagrin in that loss.

I congratulate you upon this paper, Dr. Green, and thank you for presenting it and hope in your closing discussion you will tell us how to save some of these cases that are burned over one-half or two-thirds of the body or more.

Dr. R. L. Pittman (Fayetteville): You know, there is one advantage the doctors have, and that is the right to change their minds. I remember it has not been so very many years ago when the treatment for burns was to put the patient to bed and put an electric fan at the foot of the bed and fan that burn to keep it cool. Now we have come to just the opposite; we put a canvas shelter over the patient and put lamps under there to keep the patient warm. Every day we have to unlearn something we have learned.

Tannic acid is a real revelation in the treatment of burns. In the first place, it often saves the patient's life; in the second place, it is economical. Burns are expensive, in the hospital; ointments get all over the sheets and blankets and pillow cases. Tannic acid may stain them, but it shortens the period of treatment. It is a boon to the hospital, to the doctor, and to the patient. I have discarded all other treatment for burns and am using tannic acid exclusively today.

Dr. Green (closing the discussion): About extensive burns, Dr. Burrus, I am satisfied that an extensive burn means only a larger area to treat. Of course, a burn that covers half the body is a serious thing to treat, as is any lesion involving half of the body surface. We are dealing first with shock, primary shock. The treatment for primary shock is like that for any primary shock. We give the patient an abundance of fluid by the bowel, by the drip method, usually 3,000 to 4,000 c.c. in the average case. In a patient with a great deal of vasomotor relaxation I give gum acacia solution intravenously. By actual test blood pressure is found to be brought up to normal standard by the injection intravenously of six per cent gum acacia solution. If the patient is in such condition that he can receive the local treatment immediately, it is done. Blisters are removed. The surface is cleaned off with alcohol, paying particular attention to the skin surrounding the burns; then the tannic acid spray is begun. The patient is put under the canvas tent or a sheet, with lamps under there to keep the temperature at from 95 to 100. It is very difficult for the patient to lose body heat when the temperature surrounding him is about the same as his. We do not put any dressing on the wound; he lies under the tent on a sterile sheet, naked. The burned surface is sprayed every two hours and after several applications begins to turn black—is tanned. That

also prevents loss of heat and loss of fluid. It obviates the necessity of further dressings, prevents the shock from exposure of nerve endings to the air for dressings, and removes shock.

I have treated burns of three-fourths of the body surface very satisfactorily. Sometimes these cases do get infected. In that case we remove the tannic acid pad, remove the pus, treat the wound with mercurochrome, and then a day or two later begin the tannic acid treatment again.

The advancement of the treatment of burns has been in the recognition of the pathology. We look upon a burn now as a wound; we did not before. The old idea was to apply a salve or something for the relief of pain. The worst cases we have are those that have been handled outside for eight or ten days perhaps and come in infected. Those cases, fortunately, are past the period of shock, primary or secondary, and we are dealing with infection only. Those cases can be treated very nicely by cleaning off the surface of the wound and then beginning tannic acid treatment.

SURGICAL COMPLICATIONS OF PNEUMONIA

W. B. McCutcheon, M.D., F.A.C.S., Durham

Pneumonia is a disease of the lungs which is characterized by inflammation with exudation. The exudate may be serum or pus but is not infrequently the latter. A small fluid exudate may be rapidly absorbed and is in some cases. The most frequent offending organisms in pneumonia are the four types of pneumococci, streptococci, staphlococci, and Vincent's organisms; or a mixed infection may be present.

Whatever may be the mode of entry of pneumococcus infection into the lung, whether through the bronchial tree or from the blood stream, a positive blood culture is the rule early in the disease. Then it is only necessary for some local weakness or favorable condition to exist in order to develop an abscess, bronchiectasis, pleuritis, empyema, pericarditis, arthritis, peritonitis, or other complications.

Abscess of the lung occurs fairly frequently. It varies in size from a pea to include a large part of the lung, and is more frequent in bronchial than in lobar pneumonia. This condition is frequently difficult to diagnose because an abscess is of the same density as consolidation or unresolved pneumonia. It has to be differentiated from empyema, bronchiectasis, tuberculosis, and unresolved pneumonia. The treatment is aspiration with the broncho-scope, needle, or surgical drainage. The abscess frequently ruptures into a bronchus and drains itself.

Empyema is the most frequent and important complication of pneumonia. It occurs in two to eight per cent of the pneumonia cases. Early diagnosis is often difficult and is especially so in cases where the lung cannot collapse due to adhesions and when there is pocket formation. If the lung has collapsed and there is a fluid lever, no difficulty is encountered in making a correct diagnosis. The physical findings and X-ray are invaluable and give a correct impression. The X-ray cannot distinguish between consolidated lung, thickened pleura, and fluid in all cases unless there is a fluid level present. An exploratory

needle with local anesthesia causes little or no disturbance and should be used when indicated. The treatment of empyema is surgical drainage instituted early in the disease except in steptococcic empyema. The closed method of drainage has given better results in the cases that I have treated. I have used Dr. Hart's[1] method of tidal irrigation with suction in five cases. These cases cleared up rapidly and there was no tendency for the conditions to become chronic. The lung had expanded and the tubes removed in from ten to twelve days.

Pericarditis with effusion is easily diagnosed, when suspected, by the usual physical signs and X-ray. The treatment consists of evacuation of the fluid by aspiration or drainage, depending upon the character of the fluid. It is much safer to make an incision down to the pericardium and expose it between the left fifth and sixth costal cartilages than to do a blind puncture. The heart may be floating anteriorally on the fluid and the operator unable to detect the sensation against the needle after having passed it through the thickness of the chest wall. Drainage is instituted by resecting the fifth or sixth left costal cartilage or both. Great care must be exercised in order not to injure the internal mammary artery and vein. These may be ligated if necessary.

Bronchiectasis may be a sequela of pneumonia and may become chronic or clear up rapidly. It is characterized by profuse purulent expectoration which has an absence of fibrin and settles in three layers on standing. X-ray aids in the diagnosis. The treatment is not very satisfactory. If the condition becomes chronic, a thoracoplasty is indicated in some cases.

As a rule, if an early diagnosis is made in the chest complications of pneumonia and early treatment is instituted, the mortality will be low and there will be few chronic chest conditions.

Report of a case of migratory pneumococcic infection of the chest with pneumonia, multiple empyema, lung abscesses, bronchiectasis, and purulent pericarditis.

The case I am presenting today has all of the above mentioned complication of penumonia.

Mr. D. C., age 20, was first seen in consultation with Dr. J. A. Speed on January 9, 1929. He was admitted to Watts Hospital January 6, 1929, or three days previously, with the diagnosis of bronchopneumonia of the left side. This was confirmed by X-ray examination. He had had a cold during the week previous to coming to the hospital and had pain in left chest which was followed by a chill and rise in temperature on the day of admission. The patient's condition gradually grew worse until on January 10 he was delirious, unconscious, profoundly cyanotic, respiration shallow and 50 per minute, and pulse was 150 and very weak. The blood culture was positive for the pneumococcus. The leucocyte count varied from 20,000 to 40,000 throughout the course of the disease with polymorphonuclears varying from 80 to 90%. Due to the toxic and desperate condition of the patient at this time, it was thought advisable, after consultation, to bleed and transfuse him simultaneously. This was done, about 400 c.c. of blood being re-

[1]Hart, Deryl, Arch. Surg., 17: 102-116, 1928.

moved, and a transfusion of 560 c.c. administered. There was less cyanosis with improvement of the pulse and respiration almost immediately following this procedure. This method of treatment is frequently used by pediatricians in desperate pneumonia cases but is my first experience with it in an adult.

The patient gradually improved, his mental symptoms cleared up, until on January 15th he developed dulness over left lower lung laterally and posteriorly. The following day, the chest was aspirated and a pint of straw colored fluid was removed. The culture of this fluid was positive for the pneumococcus. Two days later the chest was again aspirated and a similar amount of fluid was withdrawn but it contained flakes and was semi-purulent. On January 20 he developed marked mental symptoms, had a convulsion, and a complete aphasia. The spinal fluid examination was entirely negative. The disturbed mental state and the aphasia persisted but the patients' general condition improved. On January 23, a thoracotomy was performed, the eighth rib was resected in the posterior axillary line, and the closed method of drainage and irrigation instituted. There was a steady improvement in the patient and it seemed that he was on the road to rapid recovery until February 1, when he had a rise in temperature, sweats, expectoration of purulent material, and appeared ill. X-ray examination at this time showed a lung abscess about the size of a lemon in the left lower lobe with bronchiectasis. The pleural cavity was clean, the lung had expanded, and the drainage had ceased. The lung abscess was aspirated under the fluoroscope and about two ounces of thick yellow pus obtained. This caused immediate improvement, although the patient continued to cough up purulent sputum which settled in three layers, characteristic of bronchiectasis. He steadily improved as the cough and expectoration subsided and was able to leave the hospital on February 27, 1929. Stereoscopic plates showed the chest to be clear at this time.

This apparent complete recovery was short lived because on March 1, 1929, the patient had severe pain in the right side of chest, chill, and elevation of temperature. He was returned to the hospital in the ambulance the following day and appeared extremely ill on admission. The temperature was 104, pulse 146, respiration 42, leucocyte count 20,400, and urine negative except for faint trace of albumen and few leucocytes. Physical examination showed rales over right lung, dullness over lower right lobe. X-ray examination showed a bronchopneumonia of the right lung and thickened pleura on the outer chest. His condition continued about the same until on March 5 he showed definite signs of fluid on physical examination. This was confirmed by X-ray. The patient was transfused, 350 c.c. of blood being given. Following this, the right chest was aspirated and sero-purulent fluid was obtained. A catheter was inserted between the eighth and ninth ribs through a tocar and Dr. Hart's method of tidal irrigation and suction was instituted. Dr. Hart was in Durham at this time and helped us with this procedure, supplied the apparatus, and helped set it up. The patient steadily improved, the temperature and pulse coming down and the drain was removed on March 21. He appeared to have recovered again. Due to his weakened and emaciated condition he was given

another transfusion of 500 c.c. of blood on March 23. Just after this, he had another rise in temperature and showed evidence of an encysted empyema in the right apex. This was proved by aspiration and drained by Dr. Hart's method. When this condition had cleared up a lung abscess was discovered in the right apex anteriorly and near the arch of the aorta. This abscess was drained in the same manner, that is with a catheter intercostally and tidal irrigation. The catheter was inserted through a cannula between the second and third ribs anteriorally. This was on March 26 and 29. Another transfusion was also given on March 28. The temperature fell to normal and the patient seemed to be recovering rapidly.

On April 4, the patient complained of respiratory difficult and pain over the pericardium. There was another rise in temperature and pulse rate. There was a slight friction rub over the pericardium. There was a rapid increase in cardiac dullness, accompanied by severe pain and dyspnea. The following day, X-ray showed the pericardium to extend out to the anterior axillary line and a diagnosis of pericarditis with effusion was made. Under local anesthesia an incision was made between the fifth and sixth costal cartilages on the left side down to the pericardium. The pericardium was aspirated with a large needle and 375 c.c. of sero-sanguinous fluid containing a few flakes was obtained. The culture of this fluid was positive for the pneumococcus. There was immediate relief of pain and an immediate improvement in the patient. This was on Thursday. On Saturday, or two days later the pain returned and was so severe that it could not be relieved with morphine and hyoscine. This condition continued for twenty-four hours. The pulse became rapid, weak, and irregular. Physical examination and X-ray showed the pericardial sac to be filled again. On Sunday night, April 9, the fifth and sixth left costal cartilages were removed, the pericardium exposed and incised. A large quantity of sero-purulent blood tinged fluid escaped. The fluid was under considerable pressure. Suction was used and the cavity irrigated with saline solution. The pericardium was oedematous and several times its normal thickness. The pericardium and wound were closed without any permanent drain being left in the pericardium. A rubber tissue drain was left in the wound down to the pericardium.

The patient obtained complete relief from pain almost immediately. From this time, the patient had a very satisfactory convalescence except for some pain in shoulders and arms which we thought were rheumatic in character. The chest remained clear on physical examination. The patient also had a typical attack of appendicitis on May 3rd. This was treated medically and subsided nicely in four or five days. The patient continued to improve and was discharged from the hospital on May 10, 1929.

During the summer, while on a vacation in Philadelphia, he had another acute attack of appendicitis. The appendix was removed under general anesthesia at that time.

Recent stereoscopic plates, fluoroscopic examination of chest, and an electrocardiograph show that the organs of the chest have completely recovered. He has been at work since last fall and has had no recent difficulty.

SUMMARY

This case is particularly interesting because of the amount of disease a patient could endure. The infection moved from place to place with regularity.

All fluids removed and cultured were positive for the pneumococcus. The fact that recovery was complete with no apparent after effects.

In am indebted to Dr. J. A. Speed who treated the patient medically, and to Drs. Davison, Hart and Stanford who saw the case in consultation.

DISCUSSION

Dr. Deryl Hart (Duke University Medical School, Durham): I want first to congratulate Dr. McCutcheon upon his persistence in following these things as they developed. I think it would have been very easy to let some of them slip by just a little longer than they did. Lesion after lesion appeared, with a positive blood culture and a very sick patient, and I think the only chance he had for recovery of the patient was the immediate drainage of the lesion. I think the patient is also to be congratulated upon his resistance. I saw the patient immediately after the empyema developed on the right side, and he was about as sick an empyema as I have ever seen. I want to say that I have never seen an empyema case with as many complications as he had that recovered. At the time he was operated on the first X-ray picture showed a shadow in the upper part of the chest and a shadow in the lower part of the chest, and we could not tell whether or not they communicated. The lower cavity was drained, hoping the upper cavity would drain into it; when it did not, the upper cavity was drained. Then this lung abscess was found. All I have to say is about the critical condition of the patient when I first saw him and the fact that he was brought through in spite of the almost innumerable complications that developed. I had always hoped to treat a case of lung abscess by suction; Dr. McCutcheon beat me to it, and just before I came down here I had a call from another surgeon who had a lung abscess.

I again congratulate Dr. McCutcheon upon the way he handled this case.

Dr. McCutcheon (closing the discussion): I wish to thank Dr. Hart for his discussion.

I also wish to say that the upper shadow did not show any fluid when the lower cavity was drained, and the X-ray man concluded it was thickened pleura. When it was drained we found the pleura very thick.

I have treated one other lung abscess since this time, with recovery.

Upon nomination of Dr. W. B. McCutcheon, Durham, Dr. Deryl Hart, Duke University Medical School, Durham, was elected as the nominee for Chairman of the Section (this nomination to be confirmed by the President of the Society).

The Section then adjourned.

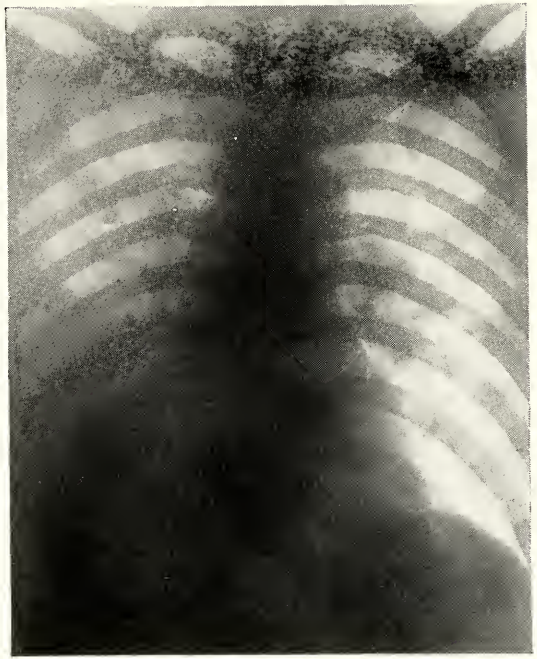

FIGURE 1
Infiltration and thickening throughout left chest. No fluid,

FIGURE 2
Dense thickening at left base and adjacent to heart. Probably fluid.

SECTION ON PEDIATRICS

Dr. Thomas M. Watson, Greenville, *Chairman*

WEDNESDAY, APRIL 30, 1930, 2:00 O'CLOCK P.M.

Men's Card Room, The Carolina Hotel, Pinehurst

Chairman: We will come to order. The first paper on "The Treatment of Empyema in Children" is by Dr. Julian A. Moore, of Asheville. Dr. Moore.

Dr. Julian A. Moore: Mr. Chairman and Gentlemen of the Section. The highest incidence of empyema occurs during the first decade of life. Souttar (1) reported a series of 1,310 cases of empyema treated in the London Hospital during a period of fourteen years. Of these patients exactly one-half were children below ten years of age. Seventy per cent of these were between one and six years of age. The mortality in the first year of life is extremely high. Almost all the statistics show a mortality of seventy per cent during the first year, fifty per cent during the second year, twenty per cent during the third year and thereafter a steady drop until a mortality of six per cent is reached in the sixth year. The average mortality given by Farr and Levine (2) in a review of 371 cases was nineteen per cent. This high mortality in the first two years of life is probably dependent upon several factors: first, the type of pneumonia. During this period broncho-pneumonia is the more frequent form of pneumonia. Broncho-pneumonia does not end by crisis as does lobar pneumonia but lasts a longer time and is more fatal. Secondly, the type of organism. During the first two years of life a higher percentage of empyemas are produced by streptococci and staphylococci than in later years. Streptococcic and staphylococcic empyemas are more virulent infections. This may be due to the fact that such empyemas are often only a part of a general infection and that the empyemas are synpneumonic. Most pneumococic empyemas are metapneumonic. Empyema that develops during the course of a pneumonia is a far more serious disease than empyema developing after the pneumonic process has subsided. Thirdly, complications such as otitis media, pericarditis, general sepsis and secondary pneumonias are most frequent in infants and such complications greatly increase the mortality. It is obvious that we can do but little to control infections but by early diagnosis and proper treatment we should be able to reduce this mortality for today the treatment of empyema is on a rational basis. There are four definite cardinal principles of the treatment of empyema. They were established mainly by the work of the empyema commission of which Evarts A. Graham was chairman. The first is the avoidance of an open pneumothorax in the acute stage of the disease. The thoracic cavity in a normal dog or human being is one cavity and not two as was the older conception. The mediastinum is a mobile and not a fixed structure. Any changes in the intra thoracic pressure on one side is transmitted to the other side. An open pneumo-

thorax on one side as that made by a thoracotomy collapses the lung on the same side and causes a shift of the mediastinum and partial collapse of the other lung. The ill effects of an open pneumothorax depends directly on the size of the opening and the vital capacity of the individual. A normal individual with a vital capacity of 3,700 c.c. can withstand an opening in the chest of 15.6 square inches. The lower the vital capacity the smaller the opening the patient can withstand. In pneumonia the vital capacity is greatly reduced until often it is barely enough to carry on the function of respiration. The development of an empyema before the penumonic process has resolved further decreases the vital capacity. In influenzial and streptococcic pneumonias and particularly in infants empyema often develops while the pneumonic process is still active and one can readily understand that nothing should be done that would further interfere with the function of respiration. Nature attempts to wall off the collection of pus by producing adhesion between the parietal and viscera pleura. It takes from one to two weeks in a pneumococcic empyema and two to four weeks in a streptococcic empyema for these adhesions to become firm and fixed. If a thoracotomy is done before these adhesions are firm, they will be broken, a total collapse of the lung will occur, and free ingress and egress of air between the pleural cavity and the room takes place. As a result the mediastinal structures not yet fixed by stiff enough inflammatory exudate, swing pendulum like from side to side and reduce the respiratory efficiency of the opposite lung to such an extent as to cause a fatal disturbance of the respiration and circulation. If one waits until the pus has become thick he may feel sure that the pneumonic process has subsided and that firm adhesions have fixed the mediastinum and has bound down the limiting walls of the empyemic cavity. A thoracotomy done before this is extremely dangerous and this is particularly so in children in whom the mediastinal structures are extremely mobile. The second principle is the early sterilization and obliteration of the cavity. In the presence of a bronchial fistula irrigation can be carried out with non-irritating fluids as normal saline, but as soon as the fistula has healed or it has been determined that a fistula does not exist, irrigation with surgical solution of chlorinated soda should be started. Undoubtedly Dakin's solution aids in the removal of necrotic tissue, in dissolving fibrinous clots and newly formed granulation tissue. In addition it is definitely bacteriocidal and hastens the sterilization of the cavity. As long as the pleural surfaces are infected healing is delayed. The third principle is the maintenance of nutrition. Patients discharging a large amount of pus lose large quantities of nitrogen and body fluids. Consequently a diet rich in protein and a large amount of fluids should be given even in the presence of fever. A diet of 3,500 calories per day is necessary for an adult. The fourth principle is the use of exercise to hasten expansion of the diseased lung and to prevent the development of scoliosis that so frequently develops in empyema of longer standing. Scoliosis is more likely to develop in children. Deep breathing and postural exercise will hasten the expansion of the lung and thus the obliteration of the cavity. Expiration against resistance as by blowing water from one bottle to

another and by blowing up balloons are very useful. Exercises should be started as early as the patient's strength will permit.

McEnnery and Brennemann (3) recently reported thirty-two cases of empyema in children treated by aspiration alone. They report that thirty were cured. They believe that children can withstand empyema and that their pleural surfaces can withstand large quantities of pus. They state that their operative mortality in 1927 was twenty-five per cent whereas by treatment with aspiration alone it was only six per cent. Holt and Howland (4) reported that of 139 cases treated by aspiration alone 13 died, 101 were later operated on and 25 were cured by aspiration. That aspiration alone will cure some cases of empyema is not to be doubted, but I do not believe it is a procedure to be advocated in spite of the remarkable results of McEnnery and Brennemann. I have seen a few rather pitiful results of aspiration therapy in the nature of chronic empyema that were a long time getting well. However, aspiration of pus to relieve embarrassment of circulation and respiration, and to diminish toxicity, during the synpneumonic process of empyema particularly the streptococcic type until the surgeon is sure that the lung and mediastunum are fixed by adhesion, at which time free drainage is established by rib resection or intercostal incision is a perfectly accepted form of treatment. In fact I think the majority of surgeons treat empyema in this manner.

A most important point is that drainage must be established at the most dependent point of the empyemic cavity. A not infrequent cause of chronic empyema is drainage that is not dependent and therefore inadequate. I believe, however, that the treatment of choice of empyema in children is by closed drainage with a satisfactory method. I believe empyema should be drained as early as a diagnosis is made. This is particularly true in children because a large amount of virulent pus in contact with such an actively absorbing surface as the pleura is a menace to the patient's life. The longer it remains the larger the cavity, the greater the amount of collapse, the thicker the exudate of fibrin over the surface of the lung and the greater the chance of pus breaking into the lung with dangerous consequences. The earlier drainage is instituted the smaller will be the cavity and the earlier will the patient recover. One cannot safely drain an empyema by an early open operation. It can be done, however, by a closed method.

I want to present to this Society the method of John Alexander which was described in the *Journal of the A. M. A.,* June 1, 1929, as being the treatment of choice of empyema in children. With this method all of the principles of the treatment of empyema can be applied and the results in my experience at the University Hospital, Ann Arbor, were excellent. The advantages of this method are that it can be done under local anesthesia without shock, and the dangers of an open pneumothorax is avoided. Adequate drainage is obtained, irrigation can be carried out without introducing the fluid under tension, a constant negative pressure present in the pleural cavity hastens expansion of the lung, messy dressings are done away with, and most important of all this method is as free from annoying details as is possible with any method

of closed drainage, and finally in only a small percentage will a secondary operation be necessary.

May I have those slides to introduce the drainage. We introduce the female endescope. This is done so the tract will be oblique, and with the knife you make a puncture wound. Next, the endescope is inserted through the drainage tract. We first, after making the puncture with the knife, insert a hemostat and immediately the endescope. Then we withdraw the endescope and the pus is under tension and will rise up in the endescope and the air will not get in and you introduce your tube which you have already had prepared. And then we withdraw the endescope and clamp it off immediately. The other end has been clamped off and that can be introduced without admitting any air into the chest. Next, we are able to get an oblique tract, and in my opinion this is the most important point in this principle, or at least of this technique, is that in an oblique tract we can keep the air tight. You only want a couple of inches or less than a couple of inches between the chest wall, and of course you have to measure your tube off beforehand so you will know you will get only that much in there. Now the dressing. I forgot to state, though, that we always put a smaller tube in the inner space above in order to carry out irrigation for the larger tube here. We have a smaller tube above and it is introduced in the same manner as the larger tube. Then a piece of vaseline gauze is put between them and a thick piece of rubber, like an inner tube, is threaded over these tubes and the tubes are sewed to the rubber by silk sutures, and then the rubber is kept to the chest by adhesive. Now that dressing is not going to be pulled off by the patient by turning in the bed or by the nurses or by accident, at all; it's solid and will stay clean for a good while.

Now, after your dressing is applied, we have the irrigation tube clamped off previously attached to a bottle, and the tube is clamped off at intervals, and the nurse can let the irrigation through it. This glass tube is attached to the bottle, the end of it being under water. You get a constant suction of that column of water. Now you can increase the amount of suction you obtain by the height at which the bottle is placed. If at the level of the bed, the amount of suction is smaller and if on the floor it will be greater. And this method is the only method in my experience that works.

I was an interne after the war, when closed drainage became popular and everybody used the one-tube method, and I never saw one work, and I became disgusted with it. And I think the larger number of surgeons did, too. But this method, I do know, will work as I have used it enough to know. There will come a period in every case in which you are going to have a little trouble, and you have to watch it when those clots are washed out, and your tube gets plugged, and at that time you or the interne will have to use a syringe, gently washing out the clots, and after they are gotten out, it's perfect. With this method empyema can be drained by the closed method successfully. It's free of annoying details as any method I know. And I am sure that it will work. I thank you. (Applause)

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CHAIRMAN: The discussion on Doctor Moore's paper will be opened by Doctor Sidbury, of Wilmington.

DR. J. BUREN SIDBURY: Mr. Chairman, I feel that we are all very much indebted to Dr. Moore for bringing us a practical method of treatment of empyema in children, especially in infants. All of us are familiar with the high mortality that was present in infants of not more than one year of age who had penumonia followed by empyema. If we can lower the death rate of these children with empyema, our efforts are well worth while. It is very interesting, I think, to know that empyema treated by other methods than those are rather technical in its technique. The fact that Doctor Brennemann reported thirty-two cases of empyema in children treated by aspiration alone and reports thirty were cured, and that their operative mortality in 1927 was 25% as against treatment with aspiration alone 6%, certainly speaks very well for the very simple method, and of course this will be very practical for the general practitioner.

As you know this is an age when we want everything as practical as possible, and any method that is so simple in its operation that the general practitioner can use it at home, is certainly to be commended and tried when it does not create any more danger to the patient. I have had occasion this spring to attempt to treat four or five of these little fellows with empyema. The trouble that I have experienced is that everybody wants to get home as soon as possible; they want to cut down the hospital expense. Doctor Brennemann contrasted the hospital duration in 1927 and 1928. In 1927, with the operations the patients stayed in the hospital two and a half months; in 1928, with the simple aspiration method alone, they were in the hospital three months; a difference of two weeks duration in the different treatment. He brought out one point that I think is well worth considering, and that is, that he was not in a hurry to repeat his aspirations; they were done from three days to a week to ten days apart. And then we have this to contend with, the pressure that is brought to bear, "Doctor, when can I go home, when can I get out of the hospital?" And Dr. Brennemann in his experience did not have this to deal with, as he was treating practically a charity ward.

And for that reason my four cases were treated by aspiration and later had rib resection, but in every case the postoperative course was very much less stormy. And all of them got along very well. One of them was six months of age and it had probably had pus in the chest

for about two months. And all of them, I think were very much better for having had the aspiration. But none of them were carried to success by the aspiration method only, simply because the people were anxious to get home, they wanted to get out of the hospital as soon as possible, and they could go home with the dressings, which could be done by a nurse or any one else that knew how to change a dressing. So I feel that aspiration method is certainly well worth our consideration, and I am very much indebted to Dr. Moore for the method of Dr. Alexander. (Applause)

CHAIRMAN: Now, Dr. Moore's paper is open for discussion.

DR. L. W. ELIAS (of Asheville): I had two cases treated by aspiration, one was a child that had already been aspirated twice by the doctor sending it to the hospital, and it was kept until ready to go home; or rather the temperature was uniform, and with no sign of the return of the trouble, and appetite greatly increased, the baby went home with the understanding that they would bring it back if they had any trouble. The second case, this fourteen months old child, was aspirated on the second birthday, 135 c.c. pus was taken out. I don't know about the amount taken out the first time, but it had to be aspirated three times, and it seemed to be on the retrograde. But it came in about two or three weeks later and was so much better that it didn't seem wise as per Dr. Brennemann's suggestion to repeat; we found it better to wait longer, and we didn't take out anything because the child was getting well. And I haven't heard anything from it in the last three or four weeks. This was a child that was treated thirty or forty miles away, in the mountains, and came in occasionally when it was not doing well for aspiration. It's sort of a slip-shod way of doing, but the people are very poor and they couldn't have kept this child in the hospital. And it seems to me that this method of aspiration has advantages in a good many cases, especially with little youngsters.

DR. ROBERTSON: Dr. Moore covered the importance of not opening the chest for a certain length of time in the different types of empyema, and I was wondering whether this aspiration method would be of use before the closed drainage method was used, instituted during the period while you were waiting. Will Dr. Moore tells us about that?

CHAIRMAN: If there is no further discussion, I will ask Dr. Moore to close the discussion.

DR. JULIAN A. MOORE: Mr. Chairman, I would like to thank you gentlemen for that discussion. I mentioned McEnnery and Brennemann's article because it's hard for me to believe that they could cure thirty out of thirty-two cases by aspiration, but they are men of the highest honesty and of course they are sincere about it. I would not like to advocate the treatment of empyema in children, and I do not, by aspiration alone. If those men can keep on doing that, I will have to change my ideas, if they can cure thirty out of thirty-two cases by that method, there is nothing else left for surgeons to do with it. I don't believe that they will continue to do so. But it has been definitely established that empyema can be cured by aspiration alone. We do not practice the habit of aspirating and draining later. The first aspiration was done to establish the diagnosis, determining the bug that was causing

it. I think that every empyema should be examined, at least a smear, and be sure that you have that organism present. Now it was Alexander's habit to immediately upon establishing diagnosis in the early empyemas to institute his closed method. Now that has been found to be satisfactory. Now, all closed methods are not satisfactory, but that is one that is, and I am using it and it worked so well in my hands that I feel like continuing to use it. And then, if the patient, two weeks later goes home, it is perfectly safe to cut the drainage tube and let them go home. They can keep up the irrigation at home, changing tubes frequently, and they will continue to get well, I mean they will go ahead and get well. The idea of the closed drainage is to avoid the open pneumothorax, as that is the thing that has produced such a high mortality, particularly during the World War. (Applause)

CHAIRMAN: Dr. Moore, we appreciate your splendid paper. Now we have had a cracking good paper, and we have another good paper to come, so I am going to put a common one in between (laughter from audience). I want to read a paper on just "The Common Cold."

DR. T. M. WATSON, the Chairman, (of Greenville): The syndrome produced by a catarrhal inflammation of the mucous membranes of the naso-pharynx is commonly spoken of as a "cold." This is one of the little-big things in medicine which all of us see each day, and concerning which not one of us knows much. As yet no one has brought out anything specific as to cause or treatment of this condition. The ordinary cold is so common among the members of the human race that we, and the laiety alike, have come to look upon it as a matter of course. This cold makes more babies sick each year than do all other conditions and infections combined. This cold gave me and countless millions of my fellows sinusitis and made us snifflers for life. It is responsible for the baby's tonsilitis, hypertrophied adenoids, otitis media, and mastoiditis. It is behind the absorption which manifests itself in nephritis, cystitis, pyelitis and rheumatic fever. It is the sower who inoculates the focus which pours toxins, or actually feeds living virulent bacteria, into the blood stream, to cause damage in parts of the body far removed from the point of original invasion. From this action the lives of many people are shortened, and countless others are handicapped on account of kidney disease, heart disease, gall-bladder infections, iritis with resulting blindness, malnutrition, and other conditions too numerous to be named here.

It may be that cancer itself is a product of low grade but constant irritation from such an infected focus. At least none of you can prove that this is not the cause of cancer (laughter from audience). The children who have to be forced to eat, and when they eat fail to gain weight and keep up with their grade in school, are nearly always victims of low grade toxemias in which the entrance of the causative organism dates back to the common cold. In our state the common cold is a leading cause of our high infant mortality. If someone announces that a case of scarlet fever, measles, whooping cough, or even chicken pox has developed in a school, excitement among pupils, teachers, parents, health officers, and family physicians reaches fever heat. No one objects, however, if the child suffering from an acute cold continues to

attend classes and infects every pupil in the room. We do not realize, or if we do nothing is done about it, that this cold is more contagious, just as treacherous, and leads to as many complications as do the diseases referred to above. As to the cause of this condition which is so common among people of all ages, we know very little. We lay it at the door of a number of bacteria groups including influenza, streptococus, strapylococcus, micrococcus catarrhalis, pneumococcus, etc., but so far as I know no one of these have fulfilled Koch's postulate. They all must be secondary invaders.

From the highly contagious character, the incubation period, and the symptoms, we know that it is caused by a specific organism. This organism is yet to be isolated. Exposure to extremes of heat or cold, lack of proper ventilation, etc., may predispose by lowering the body resistance, but I think that we all agree that these alone cannot cause the syndrome unless the causative organism is present. Until some definite organism is isolated and proved to be the cause of the cold, treatment must necessarily remain symptomatic. Prophylaxis gives the greatest hope at present. Cleanliness, ventilation, sunshine, and proper feeding all play important roles in the prevention of the cold. If, however, the child does not have the organism and is not exposed to one who carries it, he will not develop the symptoms regardless of chilling and draughts.

Proper isolation of the infected case is all important. To control the cold it must be classed along with the other diseases which are considered outlaws to public health. When a person has an acute cold they must be quarantined until the period of contagion has passed. No one has produced any drug, serum, or vaccine which has any specific action on the course of the disease. We all stand by and give expectant treatment as suggested by the symptoms that arise. Most of us overtreat the patient who is suffering from an acute naso-pharyngitis. Time honored custom suggests a drastic purgative at the outset, so as soon as the child shows signs of "catching" a cold, the mother (often with the sanction of the doctor) gives a dose of castor oil or calomel. The chief result to be expected from this is nausea, starvation, and dehydration. In most of these cases, nature supplies all of the eliminatory stimulus that is necessary. If there is constipation, an enema or colonic irrigation will usually give the results desired. If this is not effective, some mild laxative such as milk of magnesia or one of the mineral oil preparations may be used. As a rule, the child who is suffering from the effects of a cold has a poor appetite, and at best the caloric intake fails to meet the needs of the body. The increased number of stools and the vomiting which often follows the administration of purgative drugs, removes water and calories which are necessary to take care of the increased combustion brought about by the infection.

One drug which I think is definitely indicated is ephedrene. This drug, when applied to the nasal mucous membranes, causes shrinking. This gives the child more space for breathing and results in comfort. By shrinking the membranes of the nose, this drug assists in keeping the ducts leading into the para-nasal sinuses patent, thus allowing drainage and lessening systemic absorption. The eustacian tube is kept open

and many cases of otitis media prevented as well as relieved. Ten or fifteen minutes after the ephedrene is put in, it is well to use an oily spray or drop in the nostrils. This has a soothing effect and prevents drying of the secretions with "tag" formation in the posterior pharynx. If this drying can be prevented, I feel that a large amount of the harassing cough which accompanies this condition can be prevented. I use the old St. Louis "Pink Drops," which contain phenol mi, iodine grss, in one ounce of glycerine. I am very doubtful about the antiseptic action of the drugs in that dilution, but I am convinced that the glycerine is of definite value.

At the onset, especially where there is marked enlargement of the tonsils, I think it is advantageous to swab the throat with a 5 to 10% solution of silver nitrate. This seems to reduce the local reaction and may be of some bacteriacidal value. If the child coughs a great deal or is restless, paregoric seems to be the drug of choice. It is less likely to cause nausea than are unpalatable cough mixtures, and the results seem to be more uniform. I have given and taken all kinds of cold sera and vaccines and the results have been disappointing. These patients should be given all that they will take of soft, easily digestible food, and fluids should be given in large amounts. Where nausea is a complication it is well to leave off milk, as it seems to be poorly tolerated as compared with other foods. In most of the vomiting cases orange juice with added sugar seems to be retained better than anything else. By giving large amounts of sweetened orange juice sufficient calories may be furnished to supply the minimum need until the nausea is controlled. If an hydraemia or acidosis develop, they should be treated in the usual manner—by fluids subcutaneously, intraperitoneally, and intravenously. Saline or Ringers solution will relieve dehydration, and glucose solution (10 or 20%) in the vein usually corrects the tendency toward acidosis. (Applause)

Chairman: The next paper on the program, we have a man from just across the line, the South Carolina line, and we have had him to read some papers to the local societies down there, and he always gave us a cracking good one, and we are very glad to present to you today Dr. Julian P. Price, of Florence, S. C., on "Infectious Mononucleosis or Glandular Fever in Children." Dr. Price.

Dr. Julian P. Price: Mr. Chairman, and Gentlemen: Recently there came under our observation a baby of seven months with an acute glandular swelling, associated with fever, an enlarged spleen, and a secondary anemia. The secondary anemia and the blood picture made the diagnosis of an acute lymphatic leukemia very suggestive. Repeated blood studies and the subsequent course of the disease, however, showed that we were dealing with a sporadic case of infectious mononucleosis. Although this condition is occasionally met with in epidemic form in small children, it is apparently rare in sporadic form. For this reason, this case is being presented along with a general discussion of the disease.

Case—B. B., male, white, aged seven months, was brought into the office, the complaint being that the baby was suffering from fever and swollen glands. The family history was negative. The baby had been

born at full term, was nursed for four months, then put on a modified Dryco formula which supplied twelve calories to the pound of baby weight. The gain in weight the past three months had been very slow. The baby has received no orange juice or cod liver oil, no other food than the Dryco formula. There had been no serious illness, although for the past month the mother says that the baby has not seemed to be well, being irritable and fretful and refusing its food at times, although he was not running any fever. Three days before we saw the baby, he had developed a daily fever, ranging from 101 to 102. The family doctor thought it some gastric disturbance after a blood smear had ruled out malaria. Two days later, it was found that the baby had a generalized glandular enlargement.

Physical examination—A baby of seven months lies quietly on the table, appearing drowsy when left alone, irritable when molested. He does not appear acutely ill. The general nutrition is poor, the muscles flabby, and the subcutaneous tissues of poor tone. There is evidence of advanced rickets with marked bossing of the head and enlargement of the epiphyses at the wrists and ankles. Outside of the above, the main findings on examination are: a throat that is slightly injected though not acutely inflamed, a spleen that is enlarged until it reaches the level of the umbilicus in the anterior axillary line, a liver that is just palpable at the rib margin, and a generalized glandular enlargement. The skin is clear. The glands involved are the anterior and posterior cervicals, the axillary, inguinal, and popliteal groups. The glands are discrete, elastic to feel, and are about the size of lima beans. They do not seem to be tender to touch. The blood picture at this time showed:

Hemoglobin	55%	W. B. C.	44,200
	Differential count		
P. M. N.	16%	Atypical lym.	77
Small lym.	5	Total poylmorph	16
Large lym.	2	Total mononuclears	84

The red cells were typical of a secondary anemia. The differential counts were all checked with the Goodpasture peroxidase stain. All the blood studies were made by the writer. The atypical lymphocytes mentioned above presented the following appearance. The cells were slightly larger than the normal polymorphnuclear and were comparatively uniform in size. The nuclei were not oval, but had an indentation, slight or marked, giving them a kidney shape. The nuclei might fill the entire cell or there might be a definite ring of cytoplasm around them and they did not stain a uniform color throughout. No nucleoli were seen. The cytoplasm was ground glass in appearance with no granules. The entire cells stained dark with Wright's stain. These cells could be readily confused with the abnormal lymphocytes appearing in an early lymphocytic leukemia. In the presence of the marked anemia, although the baby had a manifest severe rachitic involvment, and the blood picture with marked lymphocytosis a tentative diagnosis of an acute lymphatic leukemia was made. Four days later the baby was again examined. In the interval he had been running a daily temperature of 101. The physical examination revealed no changes in the

general condition. The blood picture at this time showed that the hemoglobin had dropped 7% to 48%. The number of white cells had dropped from 44,200 to 20,400. The differential count showed that the relative number of polymorphnuclears and mononuclears was unchanged, although the number of atypical lymphocytes had dropped from 77% to 67%.

At this time the baby was started on twelve drops of Viosterol a day with daily exposures to the Alpine Light. Another blood study was made in four days. The hemoglobin had dropped two more points. The white cells had dropped to 15,900. The percentage of polymorphnuclears had increased from 15 to 35%, and the number of atypical lymphocytes dropped from 67% to 50%. The baby was observed at one week intervals for the next month and then at monthly intervals for seven months. Space forbids a detailed discussion of the various findings. The temperature returned to normal eight days after the onset of the disease. The spleen and glands had returned to normal size three and a half months later. One month after onset, the blood still showed 7% atypical mononuclears but the blood picture was normal again two months after the first fever and enlargement of glands. Under a concentrated modified milk formula and the continued use of Viosterol, the appetite and general condition showed definite improvement. There was no return of the fever or glandular swelling. The last examination was made seven months after the onset of the disease.

In reviewing the case, we find a baby of seven months presenting an acute condition which in its incipiency strongly resembled an acute leukemia. The clinical picture, the concomitant secondary anemia, and the study of the white cells of the blood all suggested this. It was only through repeated studies of the blood and the observance of the course of the disease that a definite conclusion could be reached. The rarity of this condition in babies in sporadic form made the condition just that much more difficult in the beginning, to diagnose.

Discussion—In 1889, Pfeiffer (1) described a new clinical entity which he called Drüsenfieber or Glandular Fever. The condition as he found it was as follows: An acute infectious process met with in children between the ages of five and eight. The characteristic finding, in addition to the fever, was enlarged and tender lymph glands. The onset was usually sudden with fever, restlessness, and pain in the extremities. The fever lasted from one to five days. Soon after the onset, the cervical glands became swollen and painful. The third or fourth day, the liver and spleen were found to be slightly enlarged. With the subsidence of the fever, the children felt well and appeared normal save for the glands, which remained enlarged but no longer tender and which subsided gradually. No examinations of the blood were made in Pfeiffer's cases. In 1896, West (2) described an epidemic of glandular fever in Ohio, finding ninety-six cases in forty families, and the following year we find a full discussion of this condition in Lancet by Williams (3), who cited several new cases. But neither of these two men mentioned the blood picture. It is to Turk (4) that we owe credit for first calling attention to blood changes. In 1907, he reported three cases of an acute infection characterized by a marked increase in the mononuclear

cells of the blood. Despite his suggestion, many authors continued to report cases of glandular fever without studying the blood, and Hass (5) in 1912, in reporting 12 cases, went so far as to say that he found nothing abnormal in the blood.

However, subsequent work by Cabot (6), Marchand (7), Sprunt and Evans (8), Longscope (9), Bloomfield (10), and others have verified the earlier work of Turk and demonstrated that the glandular fever of Pfeiffer is a distinct clinical entity associated with a relative increase in the mononuclear cells of the blood. It is generally conceded at the time that glandular fever and infectious mononucleosis are one and the same condition and the term infectious mononucleosis is being adopted as the preferable name. The cause of the condition is unknown. In an intensive study of 105 cases, Rohner, Baldriger, and Herman (11) were unable to arrive at any definite conclusion as to the etiology in spite of throat cultures, blood cultures, and examination of excised glands. But most writers agree with Longcope that infectious mononucleosis is a definite entity, of specific but unknown etiology. Various forms of streptococci, staphylococci, Vincent's organisms, and diphtheroid organisms have been advanced as the infectious agent, but careful study has failed to prove their guilt. The disease is infectious and appears in both epidemic and sporadic form. Several epidemics have been reported. Recently Carlson, Brooks, and Marshall (12) have reported an epidemic in Wisconsin of 838 cases, 79 of which they were able to study carefully. Davis (13) also reports a recent epidemic of nine cases from a nursery in Chicago, in which all of the infants were less than two years of age. Sporadic cases are seen only occasionally, but it is possible that many of these cases go undiagnosed, the condition being thought of as a simple cervical adenitis. On the other hand, many cases are reported as glandular fever but are not complete since the essential blood findings are not reported.

Thus in 1924, Bloomfield could find less than 40 cases adequately studied, but since that time many authentic cases have been added to the literature. Children of school age seem to be most suspectible, although infants may also be affected, especially in epidemics. Males seem to be slightly more susceptible than females. Since the disease is so rarely fatal, pathological studies have been meager. Outside of a lymphatic hyperplasia of the involved glands, no distinct pathological lesions have been found in the body. The blood picture is the most interesting and at the same time the definite pathognomic factor in the disease. As stated above, there is a relative increase in the mononuclear elements of the white blood cells. Turk, Cabot, and others in their early studies, identified these as belonging to the lymphocytic family. In 1919, Saunders (14) advanced the theory that they were not lymphocytes, but in reality were non-granular myeloblasts. Subsequent work with the peroxidase stain has shown that the early contention was the right one and that they are lymphocytic in origin. The total number of leucocytes is almost always elevated, running from 20,000 to 40,000, although occasionally, as stressed by Bloomfield, and Major (15), there may be a leucopenia. There is often a concomitant decrease in the actual number of the polymorphnuclear cells of the blood,

Longcope finding only 2,000 of these per cu. mm. in one case. Bloomfield describes the blood smear as follows: In addition to the normal small lymphocytes and large mononuclears, the blood shows another type of cell which has been well spoken of as the pathological lymphocyte. It it this third type of cell which predominates and to which particular interest is attached. These cells are somewhat larger than the small lymphocyte and contain oval kidney-shaped, slightly lobulated or Riedertyped nuclei, staining deeply with Wright's or Hasting's stain. They are usually without nucleoli and are often eccentrically placed in the cell. Sometimes the nucleus almost fills the cell, but at other times it is surrounded by a fair amount of basophilic protoplasm of ground glass appearance, which does not contain any definite granules. The abnormal cells do not show any granules when stained with the peroxidase stain. These lymphocytes, normal and pathological, are usually found to comprise from 40 to 80% of the total leucocytes, with the percentage running higher in sporadic cases. Chevalier reports (16) one case with a total white cell count of 22,000 of which 93% were lymphocytes and mononuclears. The clinical picture is a rather characteristic one. The incubation period is ordinarily from 5 to 10 days. The onset is usually sudden with rise in temperature to 102-103. There is frequently a slight nasopharyngitis with sore throat and a general feeling of malaise. In some of these cases there is acute abdominal pain, general myositis, vertigo, faintness, and in one case epistaxis (17). In two or three days, the lymph glands become enlarged and sometimes painful. The glands are hard and elastic. On physical examination, the patient appears to be uncomfortable and feverish, but not acutely ill. There is frequently a macular, rose-colored rash on the chest, abdomen, and extremities. There is usually a slight injection of the pharynx. The most characteristic feature, however, is the enlargement of the lymph glands. The most frequently involved group is the superficial posterior cervical group, and these are usually the group affected first. Other groups may be involved, including the anterior and deep cervical, the axillary, epitrochlear, and inguinal. There is also an enlargement of the liver and spleen. The acute abdominal pain is probably due to either an enlargement of the mesenteric glands or to a hepatitis. The acute symptoms subside rapidly. The fever lasts from 2 to 24 days, running a regular or irregular course. The fever usually comes down gradually, although in one small epidemic of 10 cases, 9 fell by crisis on the fourth or fifth day (18). The glands return to normal size slowly, at times requiring months. The blood picture returns to normal somewhat more quickly, although frequently several weeks before a normal differential will be encountered. Fortunately, complications are rare. Suppurations of the glands have been reported, but these are probably due to secondary infection. Carlson, Brooks, and Marshall found this complication in 8 out of 79 cases, and in each case they found a staphylococcus aureus in the suppurating gland. Hemorrhagic nephritis is occasionally met with and it is probably the most serious complication encountered. Most writers claim that relapses do not occur, although Davis reported five relapses out of nine cases in an epidemic in babies. A mild anemia may be found in the late stages, this being especially true in infants.

Mason (19) reports one case in which there was jaundice, and Craik one with bleeding from the gums (20). We have been unable to find any report of a case in which death could be attributed to infectious mononucleosis itself. The diagnosis is not always an easy one to make. Jager (21) speaks of cases with severe abdominal pain which stimulates an acute abdominal condition. The conditions, however, which are most likely to be confused with the condition are tuberculosis, typhoid fever, Hodgkins disease, and acute leukemia. A careful physical examination with accurate blood studies will usually rule out the first three. In the case of an acute leukemia the difficulty is often great and also most embarrassing as one attempts to give prognosis. Careful studies of the blood smear with the peroxidase stain will rule out a myelogenous leukemia. But an acute lymphatic leukemia and an infectious mononucleosis may appear almost identical in the early stages, as we tried to bring out in the case reported. It is only by careful and repeated studies of the blood that a definite conclusion can be reached. The main points in the differential diagnosis, as stressed by Lucas (22) are: that in infectious mononucleosis there is, (1) absence of any anemia, (2) absence of any tendency to spontaneous hemorrhage, (3) a much less striking increase in the lymphocytic elements of the blood, and (4) a relative brief and self-limited course. Yet these distinctions do not always hold, and the diagnosis remains in doubt in the early stages. As mentioned above, the prognosis is excellent. Bass and Herman (23) have followed cases over a period of six years and have found no relation in this time to a leukemia, and conclude that infectious mononucleosis leaves no lasting effect on the patient.

Conclusion. A case of infectious mononucleosis in a seven months baby is reported with a general discussion of the disease. Special reference is made to the difficulty in diagnosis between infectious mononucleosis and acute lymphatic leukemia in the early stage. (Applause)

CHAIRMAN: I want to thank Dr. Price for the Section, for this excellent paper, and the discussion will be opened by Doctor Aldert S. Root, of Raleigh.

DISCUSSION

DR. ALDERT S. ROOT: Mr. Chairman, I would like to express the appreciation of this section to Dr. Price for this very interesting and excellent, exceptionally well-prepared, paper. Many articles have appeared in the literature about infectious mononucleosis since Longcope and other men have called attention to the blood picture, which sets it apart as a definite entity. It's a condition which occurs in infancy and early childhood, altogether, rarely ever being seen in adult life. It is extremely important to recognize this condition, because prognosis is one of the arts of medicine. And infectious mononucleosis is never a fatal condition, I think only one out of West's 96 cases died, and that child was one who had recently convalesced from scarlet fever. It is sometimes confused with acute leukemia, Hodgkins disease and tuberculosis, and as Dr. Price has brought out, the only way that can be told definitely is by the repeated studies of the blood. I would like to emphasize one point which Dr. Price did not bring out, the mesentery glands are always enlarged in this condition. Now this gives rise to cer-

tain intestinal symptoms, pains, constipation, or diarrhea. The condition can be confused with an acute appendicitis. And I have four cases to report in my own personal practice which demonstrates that. A good many years ago Doctor Hubert Royster called me in consultation to see this child, three years old, the temperature was 103, there was pain slightly more on the right side in the neighborhood of the appendix region. There was some doubt as to what course we would pursue in this case. The symptoms were not those of a case of acute appendicitis, and yet at the same time we were afraid not to operate. Dr. Royster opened the abdominal wall and we found a perfectly normal appendix, but the mesentery glands were markedly involved. The mesentery were full of enlarged glands about the size of beans. The child was sewed up and made an uneventful recovery. Now that was unquestionably, in the light of what we now know, a case of infectious mononucleosis. And I think that those are the things we have to bear in mind in dealing with a case of appendicitis that is not altogether well defined.

Dr. J. M. Millikin (Southern Pines): I would like to ask Doctor Price if he noticed any difference in that rash and any other kind. I will say that in our town I saw 28 cases of these so-called glandular fever and some resembled German measles and some measles and some scarlet fever. I would like to ask him if he saw any difference in them.

Dr. Bugg (of Raleigh): Mr. Chairman, I would not be content to let this opportunity pass without saying that I think that is a real paper, I think it shows thought and it shows some real work, and is really a model that many of us could follow in presenting a subject before this section or before any meeting, and I hope we will have Doctor Price with us again.

Dr. W. C. Davison: Doctor Price mentioned one point that I am very much interested in, the blood smears of these children. I have been very much interested in this particular condition, because I know very little about it, and I appreciate the splendid work Dr. Price has presented to us. When Doctor Howell became ill in 1927 he left a note for me to complete his notes on this subject, on Pfeiffer's disease, and I had never heard of it, and I couldn't find it in the medical dictionary. But after investigation, I came to the conclusion, as Doctor Price did, that glandular fever and infectious mononucleosis are one and the same condition. I would like to ask Dr. Price if he could give us the count on the platelets?

Dr. Julian P. Price: With regard to the rash, I am sorry to say I don't know, as I have never worked with them in the epidemic form, only in the sporadic form, and in that form one case only that simply looked like an ordinary rash. I am sorry I cannot give you any information on that. Now as to Doctor Davison, I did the blood work myself, and I am sorry to say that I never was much good at counting platelets, and I concluded it might as well not be recorded if I was going to do it, so I didn't record it and didn't mention it. I would like to thank you gentlemen for the courtesy of allowing me to come up here. We are having our South Carolina Medical Society meeting before long and also our pediatric meeting, and we will be glad to entertain any of

you should you come over to se us at those times. I thank you. (Applause)

CHAIRMAN: The next paper is on "Infantile Paralysis, Emphasizing the Orthopedic Care," by Dr. Alonzo Myers, of Charlotte.

INFANTILE PARALYSIS, EMPHASIZING THE ORTHOPEDIC CARE

DR. ALONZO MYERS, CHARLOTTE

Mr. Chairman, Gentlemen, Poliomyelitis or infantile paralysis,—that most dreaded of diseases because of its horrible deformities, engages our attention because of its tendency to recur more or less periodically in our state as well as in other states. It has been my privilege through the clinics which I have been holding under the State Department of Rehabilitation to see a good many cases resulting from the epidemics of the past two or three years. The majority of the cases I have seen have been from the small towns or outlying districts where they had not been diagnosed or treated until the paralysis was complete. In reviewing articles by eminent authorities on the subject they all stress the importance of pre-paralytic diagnosis so that treatment can be started within the first twelve to twenty-four hours. Dr. Robert H. Riley (1) director of the Maryland State Department of Health of Baltimore, in a comprehensive article on poliomyelitis says "Early treatment in this disease of all diseases is an absolute necessity. With the use of human serum, early hospitalization and the services of an orthopedic surgeon during the whole course of the disease, a low mortality rate, a very low average of total paralysis, a striking reduction in paralysis of the severe grade and complete prevention of deformities are to be expected." In this disease, paralysis, either partial or complete, is due to injury or death of the anterior horn nerve cells. If treatment is to succeed then, it must be applied before nerve cell destruction has taken place. Fortunately infantile paralysis may be diagnosed during its pre-paralytic stage. At this time the important symptoms, especially when the patient is a child, are prostration out of proportion to the temperature, with flushing of the face and anxiety of expression, a rapid pulse, mild injection of the throat, a coarse tremor or movement, retraction of the head on the neck, stiffness of the spine and pain in the neck, back and extremities (1). The only laboratory findings of importance are those in the spinal fluid. The fluid may be clear or slightly hazy; cells are usually increased—the count ranging from zero to 2,000. In the pre-paralytic stage polymorphonuclears may exceed 80% with a rapid change to mononuclear predominance within a day or so; as the cells decrease the solids—globulin and albumin, but especially the former—increase during the next two or three weeks producing a variable colloidal reaction (2). Cummer (3) says the differential count shows above 50% polymorphonuclears in the early stage, while later usually 90% or more are mononuclears. In general the characteristics of the fluid depends on the severity of the disease. The method of treatment in the early stage most widely advocated is convalescent serum administered as early in the disease as possible.

Riley (1) states "Experience has shown that the number of patients recovering without paralysis bears a direct proportion to the day of the disease on which the serum is given. That is, a larger number are benefited who receive the serum the first day of illness than those who receive it on the second, third or fourth day. The combined method of intrameningeal and intravenous injections given practically at the same time and the intraspinal injection repeated two or three times on successive days appears to produce the most beneficial results." Drs. Aycock, Luther and Kramer (4) of Boston, who are well known for their extensive work on convalescent serum, in an article published in February, 1929, report "The best method of administration has not yet been determined. Should it transpire that the intravenous introduction of neutralizing serum is adequate, it would appear that under circumstances in which prepared serum is not available, transfusion of whole blood from convalescents may be suitable for treatment of the disease. In this case the technic would, of course, be the same as that of any other transfusion, necessitating blood grouping. In the use of convalescent serum, it should be borne in mind that variable results are not to be unexpected on account of the fact that at present it is possible to use only serum which presumptively possesses a constant neutralizing effect."

Data collected by Aycock and Luther (5) from their observations in one hundred and six cases in which convalescent serum was used "indicate a favorable effect of convalescent serum when administered in the pre-paralytic stage of poliomyelitis, as shown by: (1) low mortality rate; (2) a low average total paralysis; (3) strikingly low paralysis of the severer grades."

The great aim in the treatment of the disease, as before stated, is to prevent the deformities in the patient and to that end the pediatrician and orthopedic surgeon should work hand in hand throughout the whole course of the disease. Legge (6) of Boston, an orthopedic authority, says "Orthopedic treatment should be begun as soon as the acute cerebral or febrile symptoms have subsided."

The orthopedic treatment can best be described by dividing it into three stages: First, the acute, painful or sensitive stage which starts at the onset of the paralysis and lasts about six weeks or longer. During this stage, rest of the patient and the affected muscles is essential. This is accomplished with the patient in the recumbent position and protection of the muscles involved, by means of light plaster paris shells, aluminum splints or braces. These lightweight and removable appliances give the necessary immobilization without burdening the muscles and also allow the application of heat in various forms which is an important part of the first stage treatment. Let it be borne in mind that in this stage of the disease, or as long as there is sensitiveness, massage in any form is very injurious. The treatment of the second or intermediary stage, that is, after sensitiveness has passed, includes general massage and muscle training with continued support by means of adjustable and removable braces and splints. This must be carried out under careful supervision because overstretching muscles that are weakened should be carefully

guarded against since every muscle is essential in reconstruction, whether it be a paralyzed or a weakened muscle. The intermediate stage is the danger stage for deformities. If the patient does not get the proper care as outlined above, deformities of varying degrees begin to appear. When these occur in the intermediate stage the procedures are corrective braces and stretching under an anesthetic, and the application of moulded plaster paris casts holding the member in the over-corrected position, followed later by ambulatory braces, which prevent recurrences of the deformity. Satisfactory results are generally obtained by these simple procedures.

In the third stage operative procedures become necessary—tendon lengthening, tenotomies, and tendon transplanting. In this stage many cases are seen, when, for lack of treatment in the acute and intermediate stages, the paralysis and atrophy is so extensive and the ligaments so stretched as to produce disturbed bony relations of the joints (flail joints). We must then resort to stabilization of the joints by various methods, such as: arthrodesis in the foot (Jones, Davis, Hoke); fusion of the spine after Hibbs; ankylosis of flail hips according to Albee. Even in this stage, it is important to have daily massage and muscle training indefinitely since improvement both functionally and aesthetically has been noted in cases after many years duration. The orthopedic treatment of poliomyelitis may be summarized as follows:

First: In the acute stages, immobilization by casts, splints or braces and the application of heat until tenderness or sensitiveness diseappears.

Second: Massage and muscle training.

Third: Stretching and operative correction of deformity followed by the application of braces.

Fourth: Constant supervision and attention over a long period of time.

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CHAIRMAN: I understand that Doctor Brooks is sick and could not be here to discuss this paper. Is there any discussion?

DISCUSSION

Dr. L. W. Elias (of Asheville): Doctor Myers has presented a subject which is a very interesting one to all of us, a subject that affects us all. When we had this epidemic in North Carolina, in 1916, I saw this, and it was extremely interesting, and we went through nine thousand cases, and we came out just where we went in without being any better off than we were before. And so we are certainly glad to have any light thrown on the subject that is possible. When Doctor Rose and I were up here in Western North Carolina, I got out his serum, and I gave that to all the cases that I came across, and we had about a dozen up there, and we gave it in all stages, and it seemed to be perfectly futile. And we tried all the things they tried in 1916 and it seemed to have very little use. As to making the diagnosis in a pre-paralytic stage, I don't believe that is very easy. And I had a case two years ago, in which, through ignorance more than anything else, I said "This looks like a pre-paralytic stage of infantile paralysis" and so the people got in touch with Doctor Spiller, from Philadelphia, and had him to come and see the child. Then Dr. Spiller tried the fluid test and things of that kind and got nowhere. Doctor Spiller said "this must be the result of a fall" and it was found out the child had had a fall from a horse. Two weeks after that the child developed a typical case of infantile paralysis. I don't believe that we are advanced over what we were fifteen or twenty years ago, as far as diagnosis and the early treatment are concerned, other than just taking care of the patient and what we can do for the muscle training and things of that sort. We are in much better condition as far as these treatments are concerned. I want to compliment Doctor Myers on his paper, for its directness and for not putting in anything that was "cranky." (Applause)

Dr. Budd (of Raleigh): Dr. Myers has brought out several points in which I am deeply interested. I think the diagnosing of pre-paralytic cases is very difficult. Dr. Myers has expressed the different methods of diagnosing and in a very clear manner.

Dr. Roberts: Right after epidemic in Roanoke several months ago, I saw two cases that were right much confusing. I saw both of them at night, when they were very weak and apparently having lost all muscular use of themselves. And the next morning they were greatly improved and none of those cases showed any paralysis later on. That was several months ago and there has been no paralysis in either one of them. It looked like in the first stages that it was a case of polio. Another thing I want to mention, with reference to this paper, was, as the Doctor emphasized, the early orthopedic treatment, and if this is done early enough you will save a lot of muscular troubles and deformities, and such as that.

Chairman: Is there further discussion? If not Doctor Myers will close the discussion.

Dr. Alonzo Myers (of Charlotte): Mr. Chairman, I did not mean to indicate that the diagnosis was so very easy. I say that it may be done. I had particular reference to epidemics, where you have all

the symptoms, where you can give the diagnosis and start the treatment.

CHAIRMAN: The next paper on the program is "The Significance of Blood in the Stools of Children," by Dr. S. F. Ravenel, of Greensboro. Dr. Ravenel.

DR. S. F. RAVENEL: Gentlemen, I am going to take the liberty of substituting for this paper, a short and I hope an interesting case report. This is the report of a case of atrophic portal cirrhosis in an infant eleven months old. This patient was admitted to the Sternberg-Childs Hospital on March 29, 1930, and died April 16, 1930. The family history is positive in the following points: The first pregnancy resulted in a stillborn foetus at seven months, due to premature separation of the placenta. The second pregnancy resulted in a normal full term infant who suffered with hemorrhagic disease of the new born on the third day, but recovered after a blood transfusion and has been normal since. The patient was the result of the third pregnancy. The family history is negative for syphilis, tuberculosis, jaundice or any hemorrhagic disease. I will refer to the subject of this report as the patient. The patient was born at term spontaneously and was normal in every respect up to the present illness. His diet was adequate in every respect and he was under the supervision of a pediatrician from birth on. The present illness began with a severe, acute upper respiratory infection at the age of nine months, two and one-half months before death. It required repeated incisions of the drums. The infection in the tonsils, pharnyx and nose was very severe. After a stormy period of about three weeks the patient apparently recovered, became afebrile, and began to take food with appetite. However, after about two weeks of recuperation, the symptoms and signs of an acute catarrhal jaundice appeared, that is, loss of appetite, vomiting, a low degree of fever, jaundice, alcoholic stools, bile stained urine, and the patient began to show markedly enlarged, tender liver which extended below the iliac crest, which this very poor X-ray picture demonstrates. It is very hard to see but the liver shadow extends well below the iliac crest during this period of acute catarrhal jaundice. The jaundice diminished in intensity, the liver decreased in size, stools assumed a more or less normal color, and the patient began to improve until about two weeks before admission. The abdomen then began to enlarge and gradually a well marked ascites appeared. The ascites became so extreme that abdominal paracentesis was necessary to relieve embarrassed respiration. The patient presented all the evidence of portal obstruction with jaundice, massive ascites, markedly enlarged abdomen, prominent cutaneous abdominal veins, swelling of the feet, bile stained urine, and an enlarged liver and spleen. A recurrence of the otitis media appeared two weeks before death and free drainage from both ears persisted. Here is a photograph taken at that time, which shows the markedly enlarged abdomen.

The laboratory studies were as follows: The blood Wassermann was negative; the tuberculin was negative, the urine was negative except for presence of bile pigment. The White count ranged from 11,000 to 30,000 with a moderate polynuclear leukocytosis. There were

no abnormal white cells. There was a secondary anemia of moderate degree. All samples of blood taken for study of serum showed immediate hymolysis to such an extent that accurate readings of the Vandenburg test, determination of the serum bilirubin, etc., were impossible. The resistance of the red cells to hypotonic solutions was increased.

I will not discuss the differential diagnosis in detail. The ascites was so extreme and collected so rapidly that very frequent tappings of the abdomen were necessary. The liver gradually decreased in size. During the last week, the jaundice became extreme and the temperature, hitherto of low degree, assumed a septic type. The patient became comatose two days before death. Autopsy showed jaundice of all tissues; marked development of all abdominal collateral circulation; an enlarged spleen; a liver weighing 510 grams, green, hard, with the exterior pitted like a nutmeg; enlarged kidneys which showed free pus in the pelvis on section; an enlarged heart, with what were considered to be warty vegetations about nitral valve; and prominent mesenteric glands.

The case was considered one of atrophic portal cirrhosis, probably secondary to the upper respiratory infection. Cultures of the heart's blood, showed negative. Cultures of the pus from the kidney pelvis showed, negative. Bile ducts and gall bladder were grossly normal and showed no evidence of lesions.

Diagnosis: Atrophic portal cirrhosis, of unknown etiology. A pathological report by Dr. Wiley Forbus, of Johns Hopkins Hospital, shows as follows: "The liver is of course the most interesting tissue. The gross and microscopic picture is that of a cirrhosis, not essentially different from that seen in the common Laennec or hob-nail type. Islands of jaundiced liver cells, without any clearly demonstrable lobular distribution imbedded in the collapsed and scarred liver tissue comprise the principle features. In the scarred areas are seen the usual concentration of bile ducts, some of which suggest sprouting in an attempt to regenerate liver cells. The number of mononuclear, wandering cells and leucocytes in the same collapsed and scarred areas is perhaps not more impressive than in the usual cirrhosis, although this reaction would seem to indicate that progressive destructive changes are still present. The degenerative condition of many of the liver cells individually and in groups would seem to indicate likewise, that the destructive agent, whatever it may be, is still active. One can see nothing in the liver section or the gross tissue which gives any clue to the character of the agent which is responsible for the liver damage. In this respect, the case is like that of many others which occur in children and indeed in adults. . . . The changes in the liver are, however, not such as to suggest any connection with biliary obstruction. In the kidney, spleen and heart, nothing can be seen except pigmentation due to jaundice."

Now, this is then a clear cut example of non-alcoholic atrophic portal cirrhosis, in an infant less than one year of age. The salient points that I desire to emphasize are: First, upper respiratory infection, 2, catarrhal jaundice, and 3, portal cirrhosis. Of course the cause of

portal cirrhosis is unknown except that it occurs most frequently in persons addicted to alcohol. In some obscure way the destructive agent attacks those parts of the liver lobule adjacent to the portal vein. The only avenues by which such an agent may reach this part of the lobule are (1) portal vein, (2) the artery and (3) the bile duct. Were the destructive agent in this case infection in the liver from the upper respiratory infection, we would expect to find frank evidence of such infection and this is entirely lacking. As we watched the progress of the disease in this patient we could scarcely help feeling that the cirrhosis was secondary to the respiratory infection—this belief hanging on no more stable grounds than the old argument of "post hoc propter hoc."

In a recent very thorough search there was found only thirteen cases of this type of cirrhosis. A fourteenth is now added. We may well emphasize as he does the possibility of the occurrence of atrophic cirrhosis in an infant; a disturbance with fever (a train of symptoms associated with the diagnosis of catarrhal jaundice), which may occasionally lead to cirrhosis. While such an outcome of what is commonly regarded in children as a comparatively mild disease is exceptional, it is wise to remember that it can occur. Possibly lesser degrees of permanent damage to the liver from catarrhal jaundice are by no means uncommon.

CHAIRMAN: I will ask Dr. LeRoy Butler to open the discussion on this fine paper.

DISCUSSION

DR. LEROY BUTLER (of Winston-Salem): Gentlemen, Mr. Chairman, I am asked to discuss a subject I know nothing about. Dr. Ravenel's discussion of a child of less than one year of age with trophic portal cirrhosis is a rather unusual condition to me. I see very few of them (laughter from audience). I knew they had this disease very frequently in Calcutta, and I am sorry they haven't it in Greensboro. So let's get nearer home. I think Dr. Ravenel has gone to great pains to work up this case, and it is a very interesting case to me. Of course there has been mention of a few cases in the literature, and I noticed in looking the subject up that they usually occur after the use of alcohol. One child had taken over a period of several weeks a general stimulant and the child died of cirrhosis. But I am sorry to say I know very little about this subject and cannot discuss it. But I would like to thank Dr. Ravenel for his presentation of this paper.

CHAIRMAN: At this time we will have a paper, "Case Reports—the Thymus Gland," by Dr. C. P. Mangum, of Kinston.

DR. C. P. MANGUM: Gentlemen, Mr. Chairman, I had to change the subject of my paper as I could not get up information that would be the least bit interesting otherwise. The thymus gland is situated behind the manubrium and in front of the trachea, great vessels and other structures which fill the superior entrance of the thorax. The anteroposterior diameter of this space is 2 cm. This gland at birth is between 4 and 5 cm. long; 1.5 to 2.5 cm. wide; and .8 to ¼ cm. thick. The average weight at birth is 6 grams. Anything over 10 grams is considered pathologic. There is not much change in the size of this gland

during the first two years. After this it gradually diminishes in size until at puberty only a vestige remains. The thymus consists of two lobes, attached above and separated below—the shape being more or less like a half opened pea-pod. Very little is known of the function of this gland. It is assumed that it produces some internal secretion which supplies the deficiency of those of the reproductory organs up to the time when they are fully developed. Whether it bears any relation to other internal secretory glands or not is unknown. The thymus may enlarge as the result of neoplasms, lues, tuberculosis, cystic formations or abscess. It may also enlarge during the course of an acute disease. The most common kind of enlargement is simple hyperplasia. Nothing is as yet known as to the cause of this hyperplasia. It may be accompanied by congestion, either acute or chronic. This enlargement may produce varied symptoms; caused chiefly by pressure on the trachea—the large vessels and nerves having a tendency to slip aside. Such symptoms as repeated attacks of cyanosis, dyspnea, a crowing sort of cry, a high pitched metallic cough, stridulous inspiration and expiration which may be confused with congenital stridor, convulsions, tremors and contractions resembling spasmophylia, symptoms resembling bronchial adenitis or retropharyngeal abscess; or any number of other pathologic conditions. The convulsions associated with enlargement of the thymus is what I wish chiefly to call attention to in this paper.

The mechanism by which an enlarged thymus produces convulsions is unknown. Experience, however, has most convincingly shown us that it does. It is thought by some to be an imballance of internal secretions. Another theory is that pressure on the trachea and the recurrent laryngeal nerve, a fixed nerve, which supplies all the muscles of the larynx with motor impulses, except the cricothyroid, and controls approximation of the vocal cords, causes a deficiency in oxygenation which in turn may produce a change in blood chemistry resulting in convulsions. The following are a few illustrative cases:

Case E. O.—Age 2 months, weight 8 lbs. 14 ozs. A full term baby, normal delivery, third child. Nothing unusual was noticed about this baby until she was six weeks old. She then began to have attacks of cyanosis associated with restlessness and a peculiar high pitched cry. These attacks occurred at irregular intervals, each attack more pronounced than the preceding one. Between attacks baby would seem perfectly normal. On the day before admission she had two hard convulsions with marked cyanosis. X-ray showed an enlarged thymus measuring 3.5 cm. wide and 5 cm. long. Practically all the enlargement showing in the right lobe.

Case C. L. B.—Age 5 weeks, weight 9 lbs. 10 ozs. Full term baby, normal delivery, first child. Baby nursed well during the first week of life. Showed no symptoms of intra-cranial birth injury. Three days before baby was brought into the hospital the mother noticed a slight tremor of all extremities. He had a hard convulsion on the morning of the day he was brought over. He has a history of difficult breathing since birth and a peculiar crowing sort of cry. X-ray shows

an enlarged thymus measuring 4 cm. in width and 6.5 cm. in length. Deep therapy relieved all symptoms.

Case J. H. E.—Age 2 months, weight 11 lbs. 11.5 ozs. A full term baby, normal delivery, third child. This baby seemed a perfectly normal healthy, happy baby up to the morning of the day of admission when he had a severe convulsion. He has a negative personal history. However, the family history reveals that one brother who seemed perfectly healthy died suddenly in infancy following a convulsion from no discoverable cause. X-ray shows an enlarged thymus measuring 5 cm. wide and 6 cm. long. Diagnosis: A history of repeated attacks of cyanosis, the metallic cough, the crowing cry, difficult breathing especially when lying on the back with the head extended, repeated convulsions ranging from slight tremors to hard spasmodic seizures of unexplainable origin, of sudden death claiming an infant brother or sister who was apparently in the best of health. All these should make one suspicious of an enlarged thymus. The symptoms present may be exaggerated by retraction of the head which produces a narrowing of the antero-posterior diameter of the superior mediastinum. Crying or excitement will also cause an exacerbation of symptoms by producing an acute congestion of the enlarged gland. In the case showing stridulous breathing it will be noted that the larynx does not move up and down as in congenital stridor—the larynx being held stationary by the enlarged gland. There may or may not be dullness on percussion on either or both sides of the sternum as the enlargement may be all antero-posterior, all lateral, or both. The X-ray picture makes the diagnosis positive. There is only one treatment, deep therapy with the X-ray which as a rule gives excellent and almost immediate relief. I thank you. (Applause)

CHAIRMAN: Dr. Keith will open the discussion, at this time.

DISCUSSION

DR. MARION Y. KEITH: Mr. Chairman, this subject is indeed a very interesting one. I think probably it is one of the most interesting subjects that we have had to come before us in the past two years. A few years back I was certainly convinced and I thought we had sufficient evidence to prove to ourselves that these sudden deaths were due to enlarged thymus. But, today, I think we still are somewhat in the dark period as to the causes of these sudden deaths. Definite work has been presented, in which certain children with enlarged thymus shadows have gone on throughout their infancy without any serious consequences. But I think that the average child that displays these symptoms should be subjected to X-ray treatment immediately. I think we are still in the dark as to the good that it does, yet I think that these patients should be given the benefit of the doubt. The recent work of Watson and Calrad, in which a series of over two hundred cases is presented, in which he has presented definite plates in which some of these children were found and remained with enlarged thymus gland even after the treatment, with the symptoms still existing. Other cases presented the same symptoms in which there was no enlargement. There has been just recently a work presented by Aldridge, of Illinois,

that has again brought that subject to the front, as to the cause of sudden deaths. He brings out some very interesting points. I am only speaking from an open mind. I am certainly in favor of further investigation, and I think yet that we will have lots of light in regard to these sudden deaths associated with enlargement of the thymus. I think we are going to have more information and that we will know more about thymus glands before long.

The Section adjourned.

WOMAN'S AUXILIARY

OFFICERS 1929-1930

President—Mrs. Gideon Hunt Macon.....Warrenton
President-Elect—Mrs. W. B. Murphy.....Snow Hill
First Vice-President—Mrs. A. B. Holmes.....Fairmont
Second Vice-President—Mrs. J. L. Spruill.....Jamestown
Third Vice-President—Mrs. D. W. Holt.....Greensboro
Treasurer—Mrs. R. F. Warren.....Prospect Hill
Recording Secretary—Mrs. P. P. McCain.....Sanatorium
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Second District—Mrs. M. A. McCuiston.....Kinston
Third District—Mrs. L. C. Beard.....Atkinson
Fourth District—Mrs. L. M. Kornegay.....Rocky Mount
Fifth District—Mrs. Roscoe McMillan.....Red Springs
Sixth District—Mrs. Russell Perry.....Durham
Seventh District—
Eighth District
Ninth District—Mrs. J. L. Sowers.....Lexington
Tenth District—Mrs. Allen T. Hipps.....Asheville

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President—Mrs. W. B. Murphy.....Snow Hill
President-Elect—Mrs. R. S. McGeachy.....Kinston
First Vice-President—Mrs. G. H. Macon.....Warrenton
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Seventh District—
Eighth District—Mrs. A. D. Owensby.....Greensboro
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EXECUTIVE BOARD MEETING CAROLINA HOTEL
APRIL 29, 12:00 M.

ANNUAL MEETING
APRIL 30, 10:00 A. M.

In the absence of Rev. T. A. Cheatham the Secretary made the invocation after which Mrs. J. W. Dickie of Southern Pines very heartily welcomed the ladies to Pinehurst. The response was made by Mrs. A. B. Holmes, Fairmont. The minutes of the Seventh Annual Meeting were read and approved after which the roll was called, the names of several members being added.

The program was changed in order to hear Dr. James Northington. The three main points of Dr. Northington's address were: Doctors and their wives should stand by each other; that doctors' wives can help in the spread of preventive medicine, and that doctors' wives should exert their every influence to expose quacks.

Dr. L. A. Crowell, President of the Medical Society, was presented and made a few remarks.

The president of the Auxiliary then made her address (Exhibit I).

Under old business, the ladies were told of the doctor's daughter, Miss Stevens of Monroe, whom they were supporting.

Several councilors made good reports, notably Mrs. L. W. Kornegay, and Mrs. Roscoe McMillan. Alamance, Robeson and Hoke deserved special mention. Asheville and Fayetteville were reported as organized.

Mrs. J. O. McClelland, Maxton, gave a most graphic description of the Southern Medical which was held at Miami. Mrs. M. L. Stevens, Asheville, told of the A. M. A.

The president then showed a beautiful gavel which was presented by Mrs. Allen Bunce, Past President of the Auxiliary to the A. M. A. A rising vote of thanks was given Mrs. Bunce. It was moved and carried that a telegram of appreciation be sent her.

The treasurer made the following report (Exhibit II):

Mrs. L. M. Kornegay gave the Nominating Committee's report which was unanimously adopted.

The new officers were presented and the new president made a very enthusiastic acceptance speech. In closing Mrs. Murphy offered a $5 prize to the lady who would get in the most new members.

As there was no further business the meeting adjourned.

PROGRAM OF ENTERTAINMENT
MRS. W. C. MUDGETT, Southern Pines, Chairman

EXHIBIT III

PRESIDENT'S ADDRESS
MRS. G. H. MACON

EXHIBIT I

Friendships formed are happy memories always and I consider it a privilege and a pleasure to have been permitted to serve as president of this organization during the past year, a privilege that has afforded

me an opportunity of knowing and making friends with so many delightful women.

Mistakes I have made, but I have at least the consolation and assurance of knowing that I have made an honest, earnest effort to perform the duties of this office.

The door of opportunity is open to us and we must use our influence collectively and individually in our clubs for health education and sanitation, and may we keep in mind at all times the importance of constant communication with the Medical Society of which each Auxiliary is a part.

The Woman's Auxiliary has been well planned, its foundation sound and with our affiliations and coöperating as we do with all civic organizations especially the General Federation of Women's Clubs and the Parent-Teacher Association, every doctor's wife has the opportunity to be the bearer of the message of better health.

If we accept our responsibility we shall be the greatest force for good in this great state of ours, and it is reasonable to hope that within another year many of the unorganized counties will be definitely committed to our work.

TREASURER'S REPORT

EXHIBIT II

Balance from 1928-1929	$ 9.00
Paid up members	226.00
Total taken in	$235.00
A. M. A. dues	58.50
Southern dues	5.00
Amount paid on San. bed	$171.50
Amount in treasury	0

EXHIBIT III

Monday, April 28

2:30 P. M.—Drive to Sanatorium. Tea at home of Dr. and Mrs. P. P. McCain. The Hoke Co. Auxiliary, hostess.

8:00 P. M.—Movie Party, Carolina Theatre.

Tuesday, April 29

10:00 A. M.—Drive to Moore Co. Hospital and Judge Way's orchid nursery.

2:30 P. M.—Bridge-tea, Pinehurst Country Club.

9:30 P. M.—Annual Medical Society Ball.

Wednesday, April 30

1:00 P. M.—Luncheon at Highland Pines Inn, Southern Pines.

2:30 P. M.—Drive to tomb of Walter Hines Page, Bethesda Cemetery, Aberdeen.

ROLL CALL

EXHIBIT IV

Allen, Mrs. B. A.....Henderson
Anders, Mrs. Mc.G.....Gastonia
Anderson, Mrs. C. A.....Burlington
Anderson, Mrs. Wade.....Wilson
Ashworth, Mrs. W. C.....Greensboro
Atkinson, Mrs. G. C.
New Hanover Co.
Baker, Mrs. H. M.....Robeson Co.
Banner, Mrs. C. W.....Greensboro
Bass, Mrs. H. H.....Durham
Battle, Mrs. T. P.....Rocky Mount
Beam, Mrs. R. S.....Lumberton
Bethune, Mrs. A. T.....Raeford
Bittinger, Mrs. S. M.....Sanatorium
Blair, Mrs. A. McN...Southern Pines
Bowman, Mrs. E. L.....Robeson Co.
Bowman, Mrs. H. E. .....Aberdeen
Brewer, Mrs. J. S.....Roseboro
Bridgers, Mrs. Dewey....Bladenboro
Britt, Mrs. J. N.....Robeson Co.
Brooks, Mrs. R. E.....Burlington
Brown, Mrs. G. W.....Raeford
Brown, Mrs. J. R.....Robeson Co.
Bryan, Mrs. L. D.....Sneeds Ferry
Buie, Mrs. R. M.....Greensboro
Bullock, Mrs. Ernest.....Wilmington
Burrus, Mrs. J. T.....High Point
Byerly, Mrs. W. G.....Sanatorium
Caldwell, Mrs. Florence
New Hanover Co.
Carr, Mrs. R. L.....Rose Hill
Carroll, Mrs. J. W.....Wallace
Carrington, Mrs. Geo. L.....Burlington
Carter, Mrs. Paul C.....Madison
Casten, Mrs. K.....Leaksville
Cheatham, Mrs. Goode.....Henderson
Cobb, Mrs. W. H.....Goldsboro
Codington, Mrs. H. C.....Wilmington
Cozart, Mrs. W. S.....Fuquay Springs
Cranmer, Mrs. J. B..New Hanover Co.
Crowell, Mrs. F. W.....Greene Co.
Crowell, Mrs. L. A.....Lincolnton
Crouch, Mrs. A. McR.
New Hanover Co.
Crumpler, Mrs. Paul.....Clinton
Currie, Mrs. D. S.....Parkton
Daughtridge, Mrs. A. L.
Rocky Mount
Dawson, Mrs. W. E.....Greene Co.
Dees, Mrs. Rigdon.....Greensboro
Dickinson, Mrs. E .T.....Wilson
Dixon, Mrs. H. Carlyle.....Leaksville
Dixon, Mrs. W. H.....Rocky Mount
Dosher, Mrs. J. A...New Hanover Co.
Elliott, Mrs. Avon..New Hanover Co.
Evans, Mrs. J. E....New Hanover Co.
Farthing, Mrs. L. E..New Hanover Co.
Flagge, Mrs. P. W.....High Point
Fleming, Mrs. M. L.....Rocky Mount
Foster, Mrs. H. H.....Norlina
Freeman, Mrs. Jere. D.
New Hanover Co.
Galloway, Mrs. W. C.
New Hanover Co.
Gilmore, Mrs. C. M.....Greensboro
Grady, Mrs. L. B.....Wilson
Green, Mrs. W. W.....Tarboro
Gwynn, Mrs. H. L.....Yanceyville
Hall, Mrs. J. S.....New Hanover Co.
Hamilton, Mrs. John H.
New Hanover Co.
Harden, Mrs. E. R.....Robeson Co.
Harper, Mrs. J. H.....Greene Co.
Harrison, Mrs. E. T.....High Point
Harvey, Mrs. W. W.....Greensboro
Hays, Mrs. A. H.....Robeson Co.
Hege, Mrs. J. Roy.....Winston-Salem
Herring, Mrs. B. S.....Wilson
Hicks, Mrs. J. T.....Dunn
Highsmith, Mrs. Seavy....Fayetteville
Hines, Mrs. E. R.....Rocky Mount
Hoggard, Mrs. J. T..New Hanover Co.
Holmes, Mrs. A. B.....Robeson Co.
Holt, Mrs. D. W.....Greensboro
Holt, Mrs. T. J.....Warrenton
Hudson, Mrs. C. C.....Greensboro
Hunter, Mrs. F. R.....Warrenton
Jackson, Mrs. W. L.....High Point
Johnson, Mrs. C. T.....Robeson Co.
Johnson, Mrs. George
New Hanover Co.
Johnson, Mrs. Julius A....Fort Bragg
Johnson, Mrs. T. C.....Robeson Co.
Jordan, Mrs. W. S.....Fayetteville
Judd, Mrs. J. M.....Varina
Keiger, Mrs. J. A.....Greensboro
Kerr, Mrs. J. D.....Clinton

Kirksey, Mrs. W. C.....Fayetteville
Kornegay, Mrs. L. W....Rocky Mount
Knight, Mrs. W. P.....Greensboro
Knowles, Mrs. D. L.....Rocky Mount
Lane, Mrs. J. L.....Rocky Mount
Lassiter, Mrs. H. L.....Halifax Co.
Lee, Mrs. S. E.....Hoke Co.
Lilly, Mrs. J. M.....Fayetteville
Lister, Mrs. J. L.....Mount Olive
Long, Mrs. T. W. M., Roanoke Rapids
Looney, Mrs. J. J. W...Rocky Mount
Macon, Mrs. G. H.....Warrenton
Malloy, Mrs. S. A.....Yanceyville
Marlowe, Mrs. W. A.....Greene Co.
Mann, Mrs. J. T.....High Point
Marriott, Mrs. H. B.....Battleboro
Martin, Mrs. J. A.....Robeson Co.
McAnally, Mrs. W. J.....High Point
McCain, Mrs. P. P.....Hoke Co.
McCain, Mrs. W. R.....High Point
McClees, Mrs. E. C.....Elm City
McClelland, Mrs. J. O.....Maxton
McCuiston, Mrs. A. M.....Kinston
McDaniel, Mrs. L. E.....Jackson
McFayden, Mrs. O. L.....Fayetteville
McGeachy, Mrs. R. S.....Kinston
McGehee, Mrs. J. W.....Reidsville
McPherson, Mrs. C. W.....Burlington
McKay, Mrs. W. P.....Fayetteville
McKeithan, Mrs. D. I..Cumberland Co.
McMillan, Mrs. Roscoe....Red Springs
McNeill, Mrs. J. W.....Fayetteville
Meadows, Mrs. W. J.....Greensboro
Michaux, Mrs. E. R.....Greensboro
Mitchell, Mrs. Roy C.....Mount Airy
Montgomery, Mrs. H. M..Burlington
Moore, Mrs. C. E.....Wilson
Moore, Mrs. H. B.....Graham
Moore, Mrs. T. V.....Acme
Moser, Mrs. W. D.....Burlington
Murchison, Mrs. D. R.
New Hanover Co.
Murphy, Mrs. J. G..New Hanover Co.
Murphy, Mrs. W. B.....Greene Co.
Murray, Mrs. R. L.....Hoke Co.
Newell, Mrs. H. A.....Henderson
Orr, Mrs. W. J. B.....Smithfield
Owenley, Mrs. A. D.....Greensboro
Patterson, Mrs. Reid.....Charlotte
Parker, Mrs. H. R.....Greensboro
Parker, Mrs. O. L.....Clinton
Parrott, Mrs. J. M.....Kinston
Person, Mrs. J. B.....Selma
Phillipps, Mrs. Chas. B...Thomasville
Pittman, Mrs. R. L.....Fayetteville
Pope, Mrs. H. T.....Robeson Co.
Powell, Mrs. W. H., Jr.....Fayetteville
Rainey, Mrs. W. T.....Fayetteville
Ray, Mrs. J. B.....Leaksville
Reed, Mrs. D. H.....Robeson Co.
Reitzel, Mrs. C. E.....High Point
Robertson, Mrs. D. E.....Burlington
Robertson, Mrs. J. F. New Hanover Co.
Robertson, Mrs. J. N.....Fayetteville
Robinson, Mrs. J. D.....Wallace
Rogers, Mrs. W. D.....Warrenton
Royster, Mrs. T. H...Roanoke Rapids
Royster, Mrs. T. S.....Henderson
Schoonover, Mrs. R. A.....Greensboro
Scott, Mrs. Chas. L.....Sanford
Sidbury, Mrs. J. B.....Wilmington
Sessoms, Mrs, E. T.....Roseboro
Sharp, Mrs. Frank A.....Greensboro
Sharpe, Mrs. C. R.....Lexington
Shaw, Mrs. Calvin,..New Hanover Co.
Shelburne, Mrs. P. A.....Greensboro
Sloan, Mrs. Henry.....Lumberton
Slocumb, Mrs. R. B. New Hanover Co.
Smith, Mrs. J. A.....Lexington
Smith, Mrs. O. F.....Scotland Neck
Smoot, Mrs. M. L.....Fayetteville
Sowers, Mrs. J. L.....Lexington
Spicer, Mrs. Wm.....Goldsboro
Spoon, Mrs. S. C.....Graham
Spruill, Mrs. J. L.....Jamestown
Staley, Mrs. S. W.....Rocky Mount
Stamps, Mrs. Thos.....Robeson Co.
Stevens, Mrs. M. L.....Asheville
Strickland, Mrs. E. L.....Wilson
Suiter, Mrs. W. G.....Weldon
Sykes, Mrs. G. L.....Salemburg
Tankersley, Mrs. J. W.....Greensboro
Taylor, Mrs. J. T.....Greensboro
Taylor, Mrs. Wesley.....Greensboro
Terry, Mrs. H. B.....Rocky Mount
Terry, Mrs. J. R.....Lexington
Thompson, Mrs. E. S...Winston-Salem
Thorpe, Mrs. A. P.....Rocky Mount
Troxler, Mrs. R. M.....Burlington
Underwood, Mrs. D. E.....Roseboro

Upchurch, Mrs. R. T.....Henderson
Verdery, Mrs. W. C.....Fayetteville
Vestal, Mrs. W. J.....Lexington
Walker, Mrs. J. B.....Burlington
Walker, Mrs. W. E.....Burlington
Walters, Mrs. C. M.....Burlington
Warren, Mrs. R. F.....Prospect Hill
Watson, Mrs. Tom..New Hanover Co.
Weathers, Mrs. Bahnson....Rosemary
Wessell, Mrs. Jno. C.....New Hanover
Wheeler, Mrs. J. H.....Henderson
Whitaker, Mrs. F. C.....Enfield
Whittington, Mrs. W. W...Greene Co.
Wilkins, Mrs. J. W.....Mount Olive
Williams, Mrs. J. H.....Sanatorium
Williams, Mrs. L. L.....Fayetteville
Williams, Mrs. R. C.....Wallace
Willis, Mrs. B. C.....Rocky Mount
Wilson, Mrs. R. B.....Newton Grove
Wood, Mrs. E. J.....New Hanover Co.
Yoder, Mrs. P. A.....Winston-Salem
York, Mrs. A. A.....High Point

$7.00 was sent in without the names.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWENTIETH ANNUAL SESSION

PINEHURST, N. C.
MONDAY, APRIL 28, 1930

PROGRAM

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWENTIETH ANNUAL SESSION

MONDAY, APRIL 28, 1930

Papers Limited to Twenty Minutes—Discussion to Five Minutes

President—Dr. J. R. Hege.....Winston-Salem
Vice-President—Dr. D. E. Ford.....New Bern
Secretary—Dr. F. M. Register.....Raleigh

PROGRAM

9:30 A.M.—LADIES' CARD ROOM

1. Call to Order by the Junior Past President, Dr. C. C. Hudson, Greensboro.
2. Invocation—Rev. Murdoch McLeod, Pinehurst.
3. Introduction of Dr. J. R. Hege by Dr. Charles O'H. Laughinghouse.
4. President's Annual Address: Dr. J. R. Hege, Winston-Salem.
5. Report of Secretary, Dr. F. M. Register, Raleigh.
6. Report of Special Committees.
7. Appointment of:
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Committee on Resolutions.
   (d) Other Committees.
8. The Practicing Physician's Responsibility in the Matter of Public Health—Dr. C. W. Armstrong, Salisbury.
   Discussion:
9. The School Nurse in a Generalized Nursing Program—Miss Willie Burt Fuller, Greensboro.
   Discussion—Mrs. Karl B. Cline, Concord.
10. Tuberculosis Control Applied to a North Carolina County—Dr. L. B. McBrayer, Southern Pines.
    Discussion—Dr. C. C. Hudson, Greensboro; Dr. P. P. McCain, Sanatorium.

2:30 P.M.—LADIES' CARD ROOM

1. Health Activities in Industry—Dr. E. S. Thompson, Medical Director, R. J. Reynolds Tobacco Company, Winston-Salem.
   Discussion—Dr. T. W. M. Long, Roanoke Rapids; Dr. E. E. Robinson, Concord.
2. The Opportunity and Duty of Women in and for Health—Mrs. Charles R. Whitaker, Chairman of Health, State Federation of Women's Clubs, and Vice-President North Carolina Tuberculosis Association, Southern Pines.
   Discussion—Dr. John Symington, Moore County Health Officer, Carthage.
3. Record Forms, Charts, Graphs, etc., in a Health Department Office—Dr. R. L. Carlton, Winston-Salem.
   Discussion—Dr. D. E. Ford, New Bern; Dr. J. H. Epperson, Durham.

8:00 P.M.—LADIES' CARD ROOM

1. Address—Dr. L. A. Crowell, President State Medical Society, Lincolnton.
2. Election of Officers.
3. Address—State Health Officer—Dr. Chas. O'H. Laughinghouse, Raleigh.

Adjourn Sine Die.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWENTIETH ANNUAL SESSION

PINEHURST, MONDAY, APRIL 28, 1930

The North Carolina Public Health Association met in the ladies' card room of the Carolina Hotel and was called to order at 9:30 a.m. by Dr. C. C. Hudson, Junior Past President, Greensboro.

The invocation was said by the Reverend W. M. McLeod, pastor of the Presbyterian Church, Pinehurst.

Dr. Charles O'H. Laughinghouse, State Health Officer, Raleigh, introduced the President, Dr. J. R. Hege, Winston-Salem, who then read his President's Address.

PRESIDENT'S ADDRESS

J. R. Hege, M.D., Winston-Salem

I have tried for months to decide on a subject to discuss on this occasion. I would like to say something that would help public health in North Carolina. Something that would make public health activities more numerous, more complete, more beneficial to our respective communities, more serviceable to our citizenry, more worthy of the expenditure of our tax monies and more deserving of the high esteem that public health is held in the minds and opinions of every North Carolina citizen.

I have visited more than half of the organized health departments in the State during the past year; and I interviewed either the health officer or members of his personnel in nearly every one of the departments and I got some knowledge of the essential factors that compose the average health department. With this information at hand, one might be expected to criticize public health programs and activities. Had I been looking for only the evil, the wrong, the errors and the shortcomings, perhaps I would, but with much love, appreciation, respect and loyalty, I was looking for something good and I had no trouble in finding it. I saw men working under handicaps of financially cramped budgets, small personnel, political upheavals, with all the useless fool changes that they bring to worry the souls of saints. I saw men bowed down over work with programs running into years, programs planned and working to preserve the health and happiness of men, women and children by the thousand—numbering out of all proportion to the personnel and budget of the department. On top of all of this,

all of the county wards, that is, the county home, county chain gang, jail and outside poor hanging on the department's neck for medical services and so often this load is heaviest, where the budget was the smallest.

In studying my visits I found myself interested to know what factors constituted public health as public health is practiced in North Carolina. It seems to me that:

The first factor and perhaps the most outstanding one was a social consciousness for the welfare of the masses. We might call it the sociological factor.

Second, an economic factor for both life and property.

Third, a legal factor exerting an influence on the unsympathetic, a compulsive influence.

Fourth, a political factor, which when conspicuously present is quite questionable and may at times present a treacherous attitude, yet this political factor is a mighty force for good when properly controlled and directed.

Let us consider these factors in some detail.

The sociological factor of public health.

Do you question that public health is allied to the science of sociology? Let me quote a modern encyclopedia's definition of sociology. "This science was established in France in the eighteenth century. It was founded for the purpose of the systematic investigating of questions relating to domestic hygiene, education, labor, punishment and reform of criminals, and the prevention of pauperism. Sociology in recent years has made advances in civilized countries in precautions against disease, the reconstruction of hospital charities, the regulations of prisons and workhouses, the establishment of reformatories for young criminal and fallen women."

In directing public health programs we have a lot to do with precautions against disease, hospital charities, prisons and fallen women.

When sociology is mentioned, we naturally think of our own public welfare departments. This is especially true of us in counties where the welfare departments are well organized. They seem to take the definition of sociology quite seriously, particularly with reference to hospital charities and precautions against diseases. Sometimes we are inclined to think that their duties are to "Tell George what to do," but that is only a presumption in most instances. We appreciate their services most in acting as a sort of "shock absorber" to protect the health officer from snags that infest the medical profession. We might call them sort of business secretaries for the health departments. Scientists would perhaps name them "catalists."

We acquaint ourselves with the principles of this sociological factor with such public health activities as the quarantine act. Here the masses are protected at the inconvenience of the individual. We may contrast this with the democratic principle of allowing the small-pox case to run at large. Again the sociological factor presents itself in our program of clinics such as tonsil, venereal, vaccination, baby and infant welfare, pre-school, school child, dental, orthopedic and many others. The free and routine physical examination of school children and notification of

parents of physical defects; dissemination of free health literature; compulsory vaccination of small-pox for school children, physical examination of applicants to marry, food handlers, prisoners and venereal suspects are all sociological in principle. The sanitary ordinances dealing with streets, premises both domestic and business come in this category as does medical services rendered the county wards, county home, outside poor and etc.

If we choose to go more into detail, we find the Chief of the Federal Children's Bureau saying, "We need adequate services for the prevention of social maladjustments and diseases that result in delinquency. Beginning first, they need relief from unnecessary separation from parents, they need adequate health and psychiatric service and more care for the physically handicapped."

But is this sociological factor found only in public health programs? How does it come to be in public health? Did the sociologist bring it in and detail the medical men, who have chosen public health as a profession to carry it on? Or are medical men sociological by training and nature? If it was a natural trait, you would expect the occasional tendency by the law of averages. But, here is an instance of fifty medical men in one town, specialists in their line of work giving their services free of charge to a hospital that cost $500,000, located in the capitol city of one of our states on a twenty-three acre lot. This hospital to which I refer receives $167,000 a year from the state legislature for its maintenance. The requirements to gain admission to this hospital are that you be divested of all earthly possessions and live in this particular state one year. If you can pay your expenses, you can't get in at all. The services rendered are expert care in orthopedics, pediatrics, general surgery, physiotheropy, ear, eye, nose and throat and any other treatment indicated. This institution isn't any part of a public health program, it's just a plain medical hospital. I wish to quote from the bulletin issued last week by the Ninth District Medical Society the following under the title of Charity—"Millions of dollars are left every year to hospitals and various charity institutions, but the writer does not recall having seen where anything has ever been left to pay doctors foı attention to charity patients. Doctors as a whole take care of charity patients freely and gladly. This takes up a great deal of time and costs the doctor a lot of money." And I want to ask you if all these activities are not sociological in principle?

Nowadays we hear a lot about socialistic medicine, state medicine, etc., personally I don't think there is any more charity done in public health practice, than in general practice. I did general practice for eight years, prior to entering public health. Outside of the county institutions, I perhaps did as much free practice in the eight years as I've done in the six years in public health. In my opinion whenever state medicine comes it will be at the demand, you notice I say demand, of the medical profession. The public is not foolish enough to want to pay for something that it has been and still is getting for nothing. There isn't a profession on earth that gives to the public gratiously the services that the medical profession gives. (By Catton) In Seattle the other day a physician, Dr. U. C. Bates, was performing an operation on

a young sailor who had been critically injured in a ship wreck. The lad was at the point of death; unless an intricate operation was performed promptly he could not recover. Now it happened that this doctor, a man of considerable means, liked to dabble in the stock market. And on this particular morning had a big deal pending, with a lot of money involved. So it happened that just as the operation was about to begin the doctor's broker called the hospital and insisted that the doctor come to the telephone immediately. Stock prices were taking a sudden slide. The doctor stood to lose a fortune unless he could get to the telephone at once and give his broker some instructions. But there was the young sailor, to whom every minute was priceless, ready for the operation that must be performed at once if it was to save him. A nurse told the doctor of the broker's call. The doctor's answer came quickly. "Tell him to jump in the lake," he said. "I'm busy!" So he went ahead and finished the operation. It was a success. The sailor lived. The time it took, however, was expensive. By the time the doctor was able to get to the broker's office he found that his fortune had shrunk by just $250,000. The sailor, by the way, was a charity patient. The doctor got no fee for the operation. And there's the story. No doctor, of course will see anything extraordinary in this. To the medical profession, this Seattle physician surgeon did the only thing he could have done. But the story is pretty significant, at that.

Robert Louis Stevenson in the eulogy of the doctor says, "He is the flower of our civilization and when that stage of man is done with, only to be marvelled at in history, he will be thought to have shared but little in the defects of the period, and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practiced an art and never to those who drive a trade; discretion tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important a Herculean cheerfullness and courage."

Does the name of Louis Pasteur, Edward Jenner, Walter Reed, Edward Livingston Treadeau and Florence Nightingale bring to your mind great professional genui or scientists or capitalists, or philanthropists? No! No! They were servants for the masses. Heroes, yes heroes for the human race. It is the spirits of these great men that still guide and direct us. At times we falter and grumble, mostly to one another. Then the great spirit buoys us up and onward, and so on through the ages we have come and will continue, so long as the good on the earth outnumber the evil.

The legal factor of public health. Our legal status was given us at birth, we were conceived in the hallowed mind of our beloved Dr. Thomas Wood, but we were born in the legislative halls of our state capitol with an annual infantile heritage of one hundred dollars. From that early day to the present, we have fought, plead, and won battle after battle in those legislative halls against our entrenched foes, ignorance, superstition, political party factions, lobbyist and even personalities.

Locally we meet our legal troubles, we have ordinances, rules and regulations made loosely, clumsy and meaningless at times and some-

times handled by both unsympathetic and inexperienced jurists, thanks be that sometimes J. P. means justice plaintiff, otherwise we might have more regrets. Who of us have no memories of the courts? We are all familiar with these unpleasant duties and it suffices to say we have an unpleasant factor known as the legal side, although we would not be without it if we had our choice. We would refer to it by the incompatible term a likeable dislike or pleasant unpleasant factor.

The political factor of public health. Political influences are evidenced in some of the sudden changes that take place at election time in health offices. Budgets are sometimes hampered by political influences. Do you suppose that this might account for the lack of growth of some of our county units? The health officer becomes a serf of the political machine. The annual report of this association in 1919 gives a rather detailed report of several of the county health units. It appears that some of the departments have made little growth in personnel or budget, since then. The reason for this stagnation may not be political. There are several things that may be responsible. The present department might be sufficient for the demands of the county, in the mind of its present health officer. The people may be so well educated in health, sanitation and etc., that it would be a waste of money to expand the department's activities. The last mentioned reasons are possible, but far from probable. We are sure that it couldn't be due to the small taxable wealth and high rate of the county, since the poorer counties need the service more than do the wealthy ones. We know it to be a fact, that the less material wealth people have, the more they need health. Times are hard this year, harder than any year since I've been in the work. Our work has increased greatly, our clinics are larger, calls more numerous, hospitalization budget exhausted at this writing.

Centuries ago a Greek philosopher, anatomist and physician, wrote: "Science and art offer nothing of value, strength is incapable of effort, wealth is useless and eloquence powerless if health is wanting."

Politicians of city, county and state are committed to the policies of conserving health. Herman Michael Biggs says: "Public health is purchasable. Within natural limitations any community can determine its own death rate."

President Hoover reminds us of the Child's Bill of Rights; believed by some to be next to the Magna Charta, one of the most important documents ever issued. It is so great a document that I think we should recite it.

"The ideal toward which we should strive is that there should be no child in America:

"That has not been born under proper conditions.

"That does not live in hygienic surroundings.

"That ever suffers from undernourishment.

"That does not have prompt and efficient medical attention and inspection.

"That does not receive primary instruction in the elements of hygiene and good health.

"That has not the complete birthright of a sound mind in a sound body.

"That has not the encouragement to express in fullest measure the spirit within, which is the final endowment of every human being."

The economic factor of public health. An economist is one who expends or directs the expenditure of money, time, or labor judiciously and without waste. The greatest loss of the American nation today is not the stock market crash and bankrupt big business. This is only money changing hands in irregular channels. There is no actual money loss. There is just as much money today as yesterday. When we think of labor judiciously expended, we think of Henry Ford with his highly specialized methods of expending labor. Industrial methods have been brought about to preserve labor. We have arranged a paper on our program on this subject. But time, as the economist thinks of it, is the number of years added to the average life of yesterday. The greatest loss in American big business today is the large number of successful, high powered business and professional men who are dropping out long before their expectancy. Stressman of Germany passed out of the picture at fifty-one years. E. H. Harriman, the great railroad builder of our country, amassed a fortune of nearly a hundred million and passed out of the picture twenty or thirty years ahead of time. These men are great losses to their countries. Look at Edison, Rockefeller and Justice Holmes and many others rendering most valuable services, yet passed seventy. It looks like some of our great business and professional men master everything but themselves. They play the business game by rules, but in the game of health, they play wrong, when it comes to eating, sleeping, resting and playing, they fudge and play the work hand. They look after the railroads, banks and big business and forget or neglect eating, resting, sleeping and recreating.

Public health activities do not stop at economizing on time. It extends into property. Listen to this. One big ship in dock was fumigated with deadly gas, while the hatches were battered down, they took out two thousand dead rats and a quarter of a ton of cockroaches. Who did this? Why, the health authorities. How about handling, purifying and preserving milk, meat and other foods in such a manner as to make them safe and economical for the consumers? Think of the hazard to our children of dirty streets, poor housing conditions and communicable disease. Thousands of lives are saved annually by our public health regulations. Tuberculosis baccilli carry away hundreds and thousands each year, but think of the reduction we have been blessed with in the last decade or so: In 1880 the rate was 250 per 100,000; 1890, 240; 1900, 200; 1910, 160; 1920, 115; 1928, 75. Public health converts disasters, like the Mississippi River flood, into blessings in disguise to the community in which they occur. I noticed a statement from the press a few days ago, that the losses from the flood had been offset by the improved sanitary conditions throughout the valley.

Dr. Louis I. Dublin and Dr. Alfred T. Lotka recently published a book on "The Money Value of a Man," in which they discussed the cost of bringing up a child, the economic value of a man at the age of eighteen and various other ages. They base their money value on the judgments in suits to recover damages for fatalities of minor children, adult children, husband or father, wife or mother and etc. They pic-

ture very clearly the economic value of man. The title and introduction of this book would lead us to believe that it was very theoretical, but close examination of it reveals the fact to us that it is very practical.

Public health nursing has a commercial value as shown in the employment by business concerns of nurses to look after the health of their workers. This is the practice of not only some of the life insurance companies, but also of many of our big industrial plants. The industries that I am familiar with have nurses in each of their large plants, well equipped with first aid materials and are supervised from a central department, well managed by a full time industrial physician. These business concerns are not experimenting with these nurses. They know that they are economical. There are approximately twelve thousand graduate nurses doing public health work in the United States today. The nurse is found to be of economic value in visiting the sick, in school work, assisting in communicable disease control, aids to the school physician, home visits to interpret the findings and advice of the physician to the parents, infant welfare, tuberculosis and vaccination clinics. She conducts nutrition classes for the underweight child, supervises the activities of the physically handicapped and gives health training and instruction to all children. She also concerns herself with the hygiene of the school plant and mental hygiene of the children.

SUMMARY

The Science of Public Health is of practical value to us only to the extent that we apply it in our daily problems. Its sociological, legal, political and economic aspects are applicable in one or more combinations in every problem that presents itself. The health worker that ignores the scientific principles of his profession, is headed for trouble. You may say "to heck" with politics, I'm in health work. I would like to remind you that public health work in North Carolina is not under a civil service administration, nor are you going to give every person you contact with his personal liberties and rights that he thinks the Constitution of the United States grants him. One is occasionally reminded of the cost in his own county of the public health department. These aspects of public health are definitely discernible and are of practical value.

Do you like your work? Do you want to keep doing it regardless of how the next political election turns out? There is only one way that I know of doing it. Make it a hard job. Load it down with hard work and keep on loading it down with harder work. Then it won't be the kind of work the other fellow is looking for. You know what the other fellow is looking for. He wants a soft snap—easy hours—good pay—no interference or difficult demands. He wants to run it for his own convenience. Well, if you make yours like that, you may think you are lucky and that you are setting pretty, but as a matter of fact, you couldn't be sitting worse. There is nothing that will put you out of a job quicker, than to make it a soft snap. If you want to keep the other fellow out and yourself in and fit, lay out a program that hurts, something difficult. Put it on a schedule that keeps you jumping, then follow it up to the minute. You can't keep mentally awake and fit

without conflict, criticism, danger, disappointment, failures, humiliation and constant everlasting pressure. Grief in your work keeps your brain keen and alert. An easy job is never happy nor a healthy one. It has no perspective, nothing to stimulate it. It makes you peevish and cross. The first thing you know, you are telling fellows where to get off. Don't let yourself feel safe. Don't make yourself comfortable. Plan some task that is dangerous and difficult, something to keep yourself hustling. Never let yourself say, I'm going to take things easy. The minute you begin taking things easy, that minute you start dying. You may not know that you are dying, but your county commissioners, board of health and everybody else will.

Our shortcomings are not our lack of knowledge, but lack of action. Don't talk to the other fellow all of the time, talk to yourself some. Tell it to yourself, till you believe it and do it. We need visatergo, more visatergo. Plenty of visatergo makes seats uncomfortable, offices stuffy and overheated. It even makes attractive stenographers less attractive. It makes us agile, hot and prancing. It makes us oscillate. It makes every cell in our bodies oscillate. It keeps us on the go. It makes us get out, plan a program and put it into action. Do not day dream and visualize and rest at that. The number of Schicks or school children examined do not count for anything, it's the positives treated or defects corrected that spells finis. The knowledge of 30 per cent underweights in a school doesn't help public health, it's the number that gain to normal weight that counts.

REPORT OF SECRETARY

F. M. Register, M.D., Raleigh

The 19th annual session of the North Carolina Public Health Association met on April 15, 1929, in the auditorium of the Pilot Life Insurance Company, at Sedgefield, just outside of Greensboro, N. C., at 10:30 a.m. Meeting was called to order by the president, Dr. C. C. Hudson, City Health Officer of Greensboro. Invocation was said by Rev. Charles F. Myers, of Greensboro.

Dr. L. A. Riser, Director of Health Conservation of the Pilot Life Insurance Company, gave a word of welcome. Dr. A. W. McAlister, President of the Pilot Life Insurance Company, gave an address of welcome.

An address of welcome was also given by Hon. E. B. Jeffries, Mayor of Greensboro. An elegant and bountiful luncheon was served the Association by the Pilot Life Insurance Company, in their spacious dining hall. Several vocal and instrumental numbers were rendered by the employees of the Pilot Life Insurance Company during the luncheon hour.

The afternoon session was held in the auditorium of the Pilot Life Insurance Company.

A Dutch luncheon was served at King Cotton Hotel at 6:30 p.m. Doctors Kitchin, of Wake Forest, Davison of Duke, and Sidbury of Wilmington gave very instructive and entertaining radio talks over Station WNRC. The following committee were appointed:

Committee on President's Address—Dr. J. H. Epperson, Durham; Dr. C. N. Sisk, of Raleigh; and Dr. J. H. Hamilton, of Wilmington.

Committee on Visitors and New Members—Dr. R. L. Carlton, of Winston-Salem; Dr. E. R. Hardin, of Lumberton; and Dr. D. E. Ford, of New Bern.

Committee on Resolutions—Dr. L. J. Smith, of Wilson; Dr. C. W. Armstrong, of Salisbury; and Dr. R. S. McGeachy of Kinston.

Program Committee—Dr. C. C. Hudson, Greensboro; Dr. J. R. Hege, of Winston-Salem; and Dr. D. E. Ford, of New Bern.

The following officers were elected for 1930—President, Dr. J. R. Hege, of Winston-Salem; Vice-President, Dr. D. E. Ford, of New Bern; Secretary, Dr. F. M. Register, of Raleigh.

The North Carolina Public Health Association adjourned to meet in Pinehurst on April 28, 1930.

On motion of Dr. L. B. McBrayer, Southern Pines, the report of the Secretary was approved.

APPOINTMENT OF COMMITTEES

The President announced the appointment of the following committees:

Visitors and New Members—Drs. J. H. Epperson, Durham; A. C. Bulla, Raleigh; J. A. Morris, Oxford.

Resolutions—Drs. H. A. Taylor, Raleigh; C. C. Hudson, Greensboro; John Symington, Carthage.

THE PRACTICING PHYSICIAN'S RESPONSIBILITY IN THE MATTER OF PUBLIC HEALTH

C. W. Armstrong, M.D., Salisbury

A combination of circumstances beyond my control has prevented my giving any attention to this paper until just before leaving home and at about that time I received a copy of a paper written by Drs. Alexander Miller, L. R. Williams and Theobald Smith on the same subject. The receipt of this paper was indeed most timely and I hope that if you have not already done so that you will read it. Doubtless all of you have heard of and experienced to some extent the acute business depression that has recently come upon us. This depression has probably affected the physicians as much as any one business, trade or profession. It has also brought about a very insistent demand on the part of the people who are out of work, welfare and other organizations interested in them and in some instances by city and county officials, for the practice of medicine by the local health department. This has coincidentally brought about an increase in the alarm felt by some practicing physicians in health department activities. I hope that I may be able to make it absolutely clear in the beginning that I understand and I am in complete sympathy with the physician who complains of health department activities where the health department is practicing medicine and thereby depriving the physician of an income which is rightfully his. I also understand and cordially detest the belly-aching indi-

vidual who is having a hard time making a living and who offers as an excuse that the health department, state and local, is doing everything free and that there is no source of income left for him. There are two sides of course to this question as there are to all questions. In the first place I consider, and I am sure that in this I have the absolute one hundred per cent support of the State Department, that our work should be at least ninety-five per cent educational and that the treatment of diseases is not the function of the health department but that of the practicing physician and this is equally true whether the patient be prince or pauper.

There may be rare instances when the prevention of disease may make necessary its treatment as is the case in tuberculosis and syphilis but even in these diseases it certainly should be the policy of every health officer to treat only those cases which have been referred to him by a physician with a written statement that such an individual is indigent and unable to provide for himself and even then I sometimes doubt the wisdom of a health department providing these treatments, except possibly in the case of tuberculosis which is, in most instances, a community rather than an individual responsibility, and if the rights of the practicing physician have been properly respected there are very few people who will not care for any case of disease which may come to them if such individual be unable to pay and this will hold good whether the individual is really a deserving case or not. I am convinced too that a great deal of criticism to which health departments have been subjected, and make no mistake about it we are all getting it, is due to the activities of well-intentioned but over-zealous and misguided individuals and organizations who are attempting to provide medical treatment without regard to the ability of the individual to pay. The schools for instance, are badly in need of education. I know of one instance where the school nurses effectiveness has for years been measured in terms of the number of cases of itch, pinkeye, etc., that she has been able to cure. In this town the school nurse is practicing medicine. She, nor those directing her have any conception of the true meaning of public health work. Recently the superintendent of the schools of that town became superintendent of schools in the town in which I live and he has taken the attitude now that our system of school nursing is a failure for our nurses are instructed that any instance of the treatment of disease on their part will be met by preëmptory dismissal. Is there not some way in which our teachers may be shown that the sick child is the practicing physician's responsibility and not that of the teacher or the health department?

The function of the health department is to get these children into the hands of the physician. Can they not also be shown that the teaching of the proper rules of health, the correction of physical defects, nutritional corrections, etc., is far more important than the treatment of itch? Our duty is, of course, to try to lead the way in our respective communities, but to be effective this must come from a higher authority or the education of the teacher must be begun before she takes a job in our schools. Our duty is to know the right thing to do and to have sufficient intestinal fortitude to do it regardless of the

pressure which may be brought to bear upon us to do otherwise. The health officer must first of all be honest with his professional colleagues. We must know the right and do it and then we may insist that the practicing physician be equally square with us and that he do his duty by the public. I know of no man who is in a position to do more for the community than the family physician who is loved and respected by his clientele and I know of no man in position to do more harm. The physician who either through ignorance, prejudice or otherwise refuses or fails to help educate the people with whom he comes in contact has lost the greatest of opportunities for worthwhile service and for saving of lives and suffering and incidentally to add to his income. How many physicians attending a case of diphtheria take the time to go over with the family the advantage of the Schick test and toxin-antitoxin and to insist upon the other children in the family having these things done for them? In almost every instance the family physician could by his influence have all these children protected and in a large majority of cases the family would gladly pay him for his services in protecting them. The same is true of smallpox, typhoid and tuberculosis and so on down the line. The time will probably soon come when the family physician's success will be measured, not by his ability to cure a given case of illness but by his ability to prevent its spread to other members of the family.

Many of our doctors in North Carolina are failing in this duty and they are incidentally failing to gather in the golden sheckles about which some of them are raising so much hell because they say that the health departments are taking them away from them. The doctor is entitled to respect and consideration from the health department, in the same ratio in which he vouchsafes these to the health department. I know of one instance when a child eighteen pounds underweight, with a history of direct exposure to tuberculosis over a considerable length of time, a four plus intra-dermal test, positive X-ray findings so reported by Dr. McCain and whose parents were told by the family physician that there was nothing in the world wrong with the child. He based his opinion on his inability to hear moist rales in the chest and a negative sputum examination. Even the child himself knows that we do not expect such findings in a case of tracheo-bronchial tuberculosis. Such a man is entitled to no respect or consideration by anyone because he is either painfully ignorant or so biased or prejudiced that he stops at nothing in order to carry a point. Why all of this, you may ask. It may occur to you that I am only passing on to you my own troubles. I am not. I am not complaining of the physicians in my county. They treat me probably better than I deserve to be treated and I get my part of the rough stuff too and some of the rough stuff comes not as a result of my own activities. So that's the why and wherefore of this paper. In other words the activities and policies in every health department in North Carolina have their effect upon every other department. It may be that I have done things which have caused embarrassment to you and the actions of other departments have had their effect upon me both for good and bad. The moral is to stay away from the practice of medicine and to always at all times have uppermost in our minds the

fact that the treatment of disease is the function of the family physician and let us impress it upon him that while we may practice only preventive medicine it is his great and important privilege to practice both preventive and curative medicine.

DISCUSSION

Dr. F. R. Harris (Henderson): I am certainly delighted that I have such eminent authority as Dr. Armstrong in my endeavor to do something along certain lines. It is my policy to get someone else to do everything I can along certain lines, and of course if they do it they should receive credit for it, too.

Dr. L. Jack Smith (Wilson): I want to add a loud Methodist amen to everything Dr. Armstrong said about the health officer's practicing medicine. I fear we are getting ourselves "in Dutch" by stepping over the line. Some do more of it than others. Those who do the most are casting discredit on public health work, and we are all suffering as a result of their activities.

Dr. J. A. Morris (Oxford): I think we ought to show the doctors that we are giving them a thousandfold what we take away from them. I do not do anything for anyone who is able to pay for it and do not do anything for a person who is unable to pay for it if I can get anyone else to do it. I think my work repays the eye, ear, nose, and throat man a thousandfold what it costs him, and so in every other line. For instance, I advise periodic health examinations and urge the people to go to their doctors. I think if the people have any sense—and I know they have common sense but not too common—they will see the value of going to their own physicians.

Dr. L. L. Williams (Fayetteville): I think this is something that is probably more important to the health officers of North Carolina and of every other state than almost any other factor we have to consider. I believe most of our criticism and fault-finding comes on account of the practice of medicine—a field that we are not in and are not supposed to be in. I have been at Fayetteville, Cumberland County, for sixteen months. When I went to Fayetteville I went in my office at eight-thirty, and I stayed there until twelve o'clock before I could get out, prescribing for people and dishing out my own prescriptions. There was a practicing physician there, Dr. McFadyen, with whom I am sure you are all acquainted. He was looking after the health work during the interim before I came. In making his final report he recommended that a whole-time physician be appointed to look after the sick poor of the county. This proposition was presented to the commissioners at their next meeting, and it went through. We tried to show the commissioners that by so doing we would be saving the county more than the salary of the man employed to treat the sick and would put the treatment of the sick into the hands of the medical profession, where it belongs. So far it has worked admirably well, and we have gotten the coöperation of the medical profession. We do not treat anybody unless he is referred there by the welfare officer and is actually receiving aid from the county; he has to be receiving aid from the county before we treat him. By doing this we have been able to cut down our hospitalization bills.

Dr. McFadyen is here this morning, and I hope he will speak on this.

Dr. O. L. McFadyen (Fayetteville): We found in our county there was a vast difference between applied and preventive medicine. With that thought in view we asked the commissioners to appoint a county physician, which they very graciously did. We find by taking advantage of the aid of the Duke Foundation for the charity cases we are placing just twice as many people in our hospitals as before and at greatly reduced cost. We find after deducting the salary of the county physician from this budget enough still remains to carry on the work. We feel that we are reaching more people in both preventive and applied medicine and that we have had marked success and that we have a better and closer association of the physicians of the county with the health department. Under the same appropriations we have employed one extra nurse, a colored nurse, and a laboratory technician—all from the saving from applied medicine. The applied medicine was what was taking our money.

This plan has the indorsement of the county medical society, and unless something unforeseen takes place I hope we shall never go back to the county health officer's having charge of applied medicine.

Dr. J. H. Woodcock (Hendersonville): In my opinion the greatest obstacle that besets the public health man is the request on the part of the public to do practice. I right now have a case of a fractured femur, in the upper third, an indigent case; and of course I have to look after it. I also have a gunshot case—a man shot through the upper femur, and I have to go out every morning to the county home and dress that case. I have no objection to that at all, but I think the greatest obstacle is to have people calling from all over the county and asking the health officer to treat a child for scarlet fever or measles or diphtheria. I have been in public health work about five years, and my hardest task is to teach the people that my work is preventive—to trace the source of typhoid rather than treat a case, to practice preventive medicine rather than applied medicine.

THE SCHOOL NURSE IN A GENERALIZED NURSING PROGRAM

Miss Willie Burt Fuller, Greensboro

As public health workers our aim is the prevention of illness and the preservation of normal health. By normal health we mean the proper growth in height, weight, structural and functional development.

We all agree with the American Child Health Association that the health of children is of fundamental importance to the physical, mental and moral soundness of our nation and to its economic status.

To carry out these aims is not as simple as it may seem and how best to accomplish them is our responsibility. In order to carry out a health program with any degree of success we must first have the entire cooperation of all health agencies in the community. How this may be done with the use of a generalized nursing program and the part the school nurse plays in this program is the object of this paper.

By a generalized nursing program we mean one agency doing all phases of public health nursing such as maternity, infant welfare, prenatal, tuberculosis, communicable diseases, venereal diseases, pre-school and school nursing. To carry out this program it is necessary that the agency works in close coöperation with the Health Department and Board of Education. There are a few cities thus far using the Generalized Nursing Program and these are Detroit, Michigan, Savannah, Ga., and Greensboro, N. C.

The advantages of using this program in a community can readily be seen in that it makes one agency responsible for the official health of the community. There is no chance of transferring the responsibility from one agency to another or of taking a particular phase to a certain stage and then turning it over to some other for completion. It permits one nurse to give all nursing services, thus doing away with much duplication and confusion. Here we have the tuberculosis, infant welfare, prenatal, postpartum, and school nurse all in one, making it much easier for the family and nurse. This agency also has more authority and better control of communicable diseases. It keeps the nurse in touch with the general field of public health and she has more opportunity to contribute to the health education of the child. In this program the nurse is the link in the chain between the school and home, the school and community, and the school, home, and the community. To the family she becomes a friend, helper, and adviser. For the school she is an interpreter and adviser. She helps the school to understand its children and parents and parents to understand their children and schools.

Through her bedside nursing, prenatal and infant welfare work, the nurse has had the greatest advantage and opportunity to study her family life. She knows how best to deal with these families, the best means of approach, and the wisest methods of procedure and how to get results.

These previous contacts with her family have gained for her their confidence and makes it much less difficult for a school nurse who is doing all phases of public health nursing to solve her school problems. She, herself can see that James has his eyes examined, tonsils and adenoids removed, that Mabel is gotten into the sanatorium instead of transferring her to the tuberculosis nurse and waiting for her to make all kinds of investigations before she is accepted, a waste of valuable time to all parties concerned, and that John who is mentally deficient is taken to a psychiatrist and is placed in a class at school according to his mental ability or in a home for feeble-minded children. That the underweight, malnourished or cardiac child is put into a nutritious class at school and has a rest period under supervision at school and home. The children whose parents are financially unable to give them hot lunches and milk get these furnished by the Parent-Teachers Association. All of these things are more easily adjusted and corrected because of the fact that the nurse knows her family and school and has the entire confidence of both.

To our schools and school nurses we rely mainly for our health education. We feel that a nurse doing all phases of public health work is

better qualified to teach health education than one who specializes in one phase of public health work.

It is the nurses responsibility to see that all her teachers have a positive health attitude and understand the vital part that they play in a community health program. By her work through the schools and homes the nurse is best able to see the health needs of a community and should plan her health program accordingly.

In order that you may see that this is a plausible program and that it may be used in connection with regular school work I will conclude this paper with the school program now in use in Greensboro, North Carolina:

THE HEALTH PROGRAM IN THE CITY SCHOOLS

The Board of Education coöperating with the Health Department, Nursing Council, and family physicians seeks to give to our city a school population free from physical defects and disease and to develop in them healthful habits which will enable them to live, and add to the happiness, efficiency and prosperity of the individual citizen, the home and the nation.

The persons most concerned in carrying out our school program are the school physician, principals, teachers, dentist, psychiatrist and nurses. The following is the outline of the work done by each group.

1. *School Physician.*

A. A complete physical examination is made by the physician of the following pupils. New pupils entering school for the first time, ones found to be 10% or more underweight, all pupils in the first, fourth, seventh and tenth grades, special pupils referred by teachers or nurses to check all defects not corrected preceding year. A record of defects found will be made on the physical examination card and reports will be sent to the parents and family physician.

B. Examination of pre-school children.

C. Immunization against communicable diseases such as smallpox, diphtheria, and in some colored and white schools for typhoid fever. It is understood that no vaccination or immunizations will take place without written permission of the parents.

D. Conducts special examinations of tuberculosis contacts and 10% or over underweights with parents present for nutrition classes.

E. Holds tonsil and adenoids clinics, for those children whose parents are financially unable to have these corrections made.

F. Diagnoses of communicable diseases.

G. Supervision of all health activities in the schools.

2. *Family Physician.*

To the family physician is referred all defects for correction.

3. *Principals and Teachers.*

We believe that the successful health education program depends largely upon our teachers and their knowledge of health principles, personal hygiene habits and ability to stimulate ideals of health in their pupils—therefore we think she is the logical person to carry on health education in the schools. For these reasons the management of the health clubs are turned over to her. The teacher should be able to see

and make opportunity to teach health in almost every study. She should never lose an opoprtunity to urge correction of defects to parents.

A. She begins each day with health club programs. This requires about ten minutes. These health clubs are to be organized in the first to the fifth grades.

B. The plan of organization is as follows: The nurse or teacher talks to the pupils of the importance of health habits and suggests that a health club be organized for improvement along these lines. She asks that the class choose a health officer and school nurse from their ranks, the election to occur as often as the teacher thinks necessary.

C. The direction of the health officer and nurse is in the hands of the teacher. She helps them and keeps the honor roll up-to-date. Every morning as soon as the children are in their seats the health officer and school nurse pass up and down the aisles and inspect every pupil. A record of the inspection is made by the teacher and at the end of the week some special recognition is given those that have passed the inspections.

D. Weighing and recording weights of all pupils monthly, except September, February and May.

E. Send to nurse or doctor any pupils who have any abnormal symptoms and report those absent on account of illness for three days, cuts or injuries not seen by physician.

4. *The Dental Program.*

A. Examination of all pupils in city schools. Results of examinations sent home to parents.

B. Prophylactic cleaning of the teeth at least once a year for all children up to 13 years of age. Extraction of diseased teeth, fillings to prevent decay in six year molars. Temporary fillings when considered necessary.

C. Record kept of all work done.

D. Teach dental hygiene and check on school instruction.

E. Make talks on dental hygiene in the schools to the Parent-Teacher Association and other similar groups.

5. *The Psychiatrist.*

Thus far we do not have a mental examination made on all our pupils, but hope to include this along with the other examinations in the near future. To the psychiatrist is referred children mentally deficient, irritable, and highly nervous, hard to adjust to school life or any other abnormal symptoms found.

6. *The Nurse.*

A. Assisting medical examiner in the physical examinations of the children and immunization clinics.

B. Classroom inspection monthly.

C. School building inspection as to heat, lights, ventilation, toilets and cafeterias.

D. Secure correction of physical defects, found in physical examination by means of (1) notices to parents, consultation with parents and home visits.

E. Maintenance of dispensary hour in school for treatments, dressings and emergencies and in inspecting of children returning to school after exclusion.

F. Give health talks to individual pupils and to classes. Give toothbrush and handkerchief drills.

G. Home visits to demonstrate proper treatment of common infectious diseases such as scabies and pediculosis. To advise having private physician diagnose causes of suspected communicable diseases and to follow up in the homes communicable diseases such as diphtheria, scarlet fever, measles, whooping cough, chickenpox.

H. Weighing and measuring pupils three times a year: Sept., Feb. and May.

I. Enforce the smallpox law (vaccination).

J. Hold special nutrition classes for underweights and tuberculosis contacts, supervising their diets and rest periods at school.

K. Assist home economics department and teaching course of Home Hygiene and Care of the Sick.

L. Attend all meetings of Parent-Teacher Association in her schools. At each meeting give short talk on some health problem in that school. This is another valuable contact for the school and nurse with the parents and community.

DISCUSSION

Mrs. Karl B. Cline (Concord): There seems to be little question nowadays as to the fundamental soundness of the idea that any one nurse working out from a health center should be concerned with and adept in all phases of the work of the center. It makes for economy of the nurse's time and effort. It keeps before her constantly the idea of the family as a unit—which the specialized nurse may sometimes lose in her concentration on the one member of the family in whom she is interested. And to the genuinely wide-awake nurse the generalized program will offer a broad field with many and varied interests and opportunities.

Now it is splendid to hear that Detroit, Michigan, Savannah, Georgia, and Greensboro, North Carolina, have developed a generalized nursing program, and we hear from Miss Fuller how well and how thoroughly the details of this plan are carried out. However, to those of us who work in small health departments, the mere mention of a special school physician, a whole-time school dentist, and an easily accessible psychiatrist sounds like a happy dream. But it seems to me that in those one- or two-nurse health departments where the limited personnel must of necessity carry on all phases of the work, a generalized program develops *itself* out of the needs of the situation.

We all have an idea, no doubt, as to how the school nurse's duties dovetail into the generalized program in a well-staffed and adequate health center. But it seems to me that we may well consider what school work is to be expected from the nurse in the small health department. How much school work may we require of one or two nurses who must do all the communicable disease control work in a county, who try to reach as many homes as possible in the maternity and infancy program, who serve as office assistants in the venereal disease clinics, helpers and runners-up for the pre-school clinics, toxin-antitoxin and typhoid campaigns, who attempt to teach and follow up the work of the midwives, etc., etc.? You all know the whole story!!!

Of course, there are many activities which must be carried on in the schools, such as control of communicable diseases—pediculosis, scabies, and others—weighing and measuring, smallpox vaccination law enforcement, etc. But it would seem that in the small health department the definite health instruction and the follow-up work in the homes, for the correction of defects and the control of minor infections, are likely to be neglected. If something must be crowded out, these things may be—because there is little pressure brought to bear in regard to them. On the whole, the schools do not ask for these services very insistently. There has been in the past no very definite report of such work to the State Board of Health. The work of the Bureau of Maternity and Infancy, or any department which asks for a special report, is not likely to suffer when something else, not closely accounted for, may be neglected in trying to cover too much ground with too few workers.

At this point, the usefulness of the appraisal form in evaluating generalized health work has proved its worth. Using this sort of appraisal in checking over the work from month to month, it becomes apparent at once if any phase of the work has failed to receive due emphasis. It is an excellent scale on which to balance item against item and determine if the whole program is moving forward in a consistent and well-rounded plan.

Dr. J. R. Hege (Winston-Salem, President): I should like to discuss this subject of generalized nursing service with special emphasis on the tuberculosis nurse. In some counties where we have generalized nursing service there seems to be a break between the generalized service and the tuberculosis hospitals. In Forsyth we have that break; and I should like to hear some of the men discuss that who have well organized hospitals, such as in Charlotte. I was trying to bring out the point that in our generalized plan in Forsyth County we cannot get a direct line on the patient that is to go into the hospital; from the generalized plan we cannot get the information that we would like to get as well as if we had an especially trained tuberculosis worker. In the city of Winston-Salem Dr. Carlton has an especially trained tuberculosis nurse, and it is very easy for him to get a patient lined up for the hospital. In the county we have a number of nurses, and they are not as familiar with the patient and the hospital as they might be if they did special tuberculosis work. That is the only fault I find in generalized nursing work; we find difficulty in getting our patients into the tuberculosis hospital.

Dr. C. C. Hudson (Greensboro): In the city of Greensboro we do not seem to have that trouble. While we have not started our clinic in the city, we have our county clinic at the sanatorium, which is about nine miles out. We have very little difficulty in the follow-up work and in getting our contacts for examination. It seems to me it is a matter for simple clerical work, for the nurse to follow up and get the information. Out in the field, of course, you have one nurse here, another there, have eight or nine nurses out in the field; and of course you have to have some form of centralization to get your information together. I think it will be just a matter of time until your nurse out in the field will learn how to get the necessary information expeditiously and with

little loss of time and get it more easily than one nurse who would have to go everywhere. Of course, our nurses have a list of tuberculosis patients, whom they are supposed to follow up. They have a list of babies they are supposed to check up on. When a patient is discharged from the sanatorium he is followed up by a nurse.

I think it is only a question of a little time before your nurses will become adjusted to that problem.

DR. R. L. CARLTON (Winston-Salem): I do not think it is entirely a matter of adjustment. We tried generalized nursing in Winston-Salem; for a few years we did generalized nursing for everything but tuberculosis. Then we dropped the tuberculosis nurse for a few years and tried to do everythnig with a generalized nurse. But the tuberculosis work dropped off; we did not get the patients in for examination at the clinics and did not get them into the hospitals. These generalized nurses are taught in general hospitals, where they are taught to fear tuberculosis; and they do fear it. All our work is carried on now by generalized nurses, except the tuberculosis work; and that is carried on by a nurse especially trained for that work.

DR. HUDSON: Quite a number of our nurses give bedside care to tuberculosis patients, go in and bathe them, rub their backs, etc. If they are afraid of it, I should like to know why they are willing to do that?

PROGRAM FOR THE CONTROL OF TUBERCULOSIS IN FORSYTH COUNTY

Presented at this Meeting by DR. L. B. MCBRAYER, Southern Pines.

Approved by North Carolina Sanatorium, P. P. MCCAIN. *Supt.*

Most heartily approved by the North Carolina Tuberculosis Association, L. B. MCBRAYER, *Managing Director.*

Cordially approved by the National Tuberculosis Association, KENDALL EMERSON, *Managing Director,* Dec. 18, 1929.

Approved by Forsyth County Sanatorium, P. A. YODER, *Supt.*

Program unanimously approved by Forsyth County Medical Society in regular meeting Dec. 10, 1929.

Approved City Health Department Winston-Salem, DR. R. L. CARLTON.

Approved Forsyth County Health Department, DR. J. ROY HEGE.

Entirely approved by North Carolina's State Board of Health, DR. CHAS. O'H. LAUGHINGHOUSE, *Secretary and State Health Officer.*

Coöperation. There should be the closest coöperation between the sanatorium and the health departments, the superintendents of schools, principals and teachers, the social and welfare agencies, the local tuberculosis association. The help of the State Sanatorium may be needed at times and of course coöperation will be forthcoming. Coöperation individually and collectively on the part of all the physicians of Forsyth County is vitally needed. In fact there should be coöperation of all the people of all ages if the tuberculosis program is to be a success—and by success is meant the finding of all cases of tuberculosis within the borders of the county, administering the treatment needed, putting into effect the known methods of prevention and following them for a long period of years.

Case Finding. The principal sources for discovering the cases of tuberculosis are the practicing physicians, the health departments, the clinics, the field nurses, the various welfare agences, etc.

The general program for the tuberculosis campaign should head up in the sanatorium and the sanatorium superintendent, the other agencies consulting him and working closely with him.

Reporting Cases of Tuberculosis. All cases of tuberculosis discovered in the county are to be reported to the county health officer and all city cases be reported to the city health officer, they in turn will report all cases once each month to the Sanatorium.

Examination of Contacts. All members of the household in which a case of tuberculosis is discovered, family and employees, should be given the tuberculin test; all positive adult reactors and all positive children reactors to be given physical and X-ray examinations.

When a case of tuberculosis is found in an adult every member of the family should be examined in order to ascertain and care for those in the family who have been infected by this adult, and the infecting adult should be isolated from the family, preferably in a sanatorium. When tuberculosis is found in a child every member of the family should be examined in order to ascertain and remove and treat the person responsible for the infection of the child and find and care for others in the family who may also be infected.

Clinics. The city health department clinic should be continued. The superintendent of the sanatorium will conduct a clinic at the Sanatorium for the county cases and for whatever cases are referred to him by the physicians of the city and county. He will also conduct clinics from time to time in Winston-Salem and at various points in the county.

The sanatorium will make X-ray pictures of all cases who are found at the clinics to need X-ray films and who are not able to have pictures made by private Roentgenologists.

Children's tuberculosis clinics should be conducted in the schools, the health departments, the superintendent of sanatorium, and. if possible, volunteers from the Medical Society, coöperating. The tuberculin tests should be given and the physical examination of the positive reactors made by physicians of the health departments and the Medical Society, and the X-ray films, one postero-anterior and one oblique, on each positive reactor, to be made by the SanatoriumX-ray department and the X-ray films to be read and the correlation of all the finding to be made by the superintendent of the sanatorium; the parents to be advised to take their children to their family physician for the correction of all defects that are found; those children classified as positive and active to be sent to the Sanatorium; those classified as positive but inactive and also those classified as "suspicious' 'to be placed under the special supervision of school nurses and the teachers, and if necessary, their family physician.

Sanatorium. The Sanatorium should have charge of the treatment of all cases of tuberculosis in the county except those who are treated by private physicians, and every person who has tuberculosis should remain under the care of the sanatorium superintendent until the final

termination of the case, with the exceptions noted. Thorough records should be kept and all the records in regard to every patient in the county should be continuing and continuous for the period mentioned above and in addition family records should be kept where there is a case of tuberculosis. From time to time there will be much valuable information, which if properly correlated and interpreted may add to the sum total of the public knowledge in regard to the treatment and prevention of tuberculosis and such things should be published for the benefit of of tuberculosis workers generally and the people particularly.

The Sanatorium, with its capacity of 180 beds, should be adequate for all the needs of the county. All active cases who are unable to go to a private sanatorium should be sent to the county sanatorium; all positive sputum cases should be received whether active or not for a period of at least two or three months, or long enough for them to be taught to practice the necessary precautions for the protection of others; cases that cannot be benefited and who can be cared for at home should be sent home, after learning to take the necessary precautions, such cases to be visited periodically by the health department nurse.

Sanatorium Superintendent. The superintendent of the sanatorium should be ready at all times to offer his services as consultant to every physician in the county and should make it possible for the physicians to come to the sanatorium to observe methods used and to study clinical material available.

He should from time to time present papers on the various phases of tuberculosis before the County Medical Society.

The Health Department. In a general way the city and county health departments should have charge of the health education program as it relates to tuberculosis, the nursing program, the nutrition and health habit formation program and the complete physical examination of the child other than for tuberculosis. Physical defects and diseased conditions, other than tuberculosis should be discovered and cured and in this there is needed the closest coöperation of sanatorium, health departments and private physicians.

The nutrition and health habit formation program should be carried on with every child, whether it is infected with tuberculosis or not.

Newspapers and Civic Clubs. A county-wide campaign to interest and inform the public should be carried on and the coöperation of the newspapers and the civic clubs, such as the Parent-Teacher Associations, the Women's Clubs, the Kiwanis, Rotary, Civitan, Lions, etc., be enlisted. In this campaign the prevention and early discovery of tuberculosis should be especially stressed, and that all who have suspicious symptoms should be urged to report to their private physicians for examination and that the private physician be requested to refer any questionable case to the health department or sanatorium clinic.

The State Sanatorium. The extension department of the State Sanatorium offers its support in every way possible to the furtherance of the Forsyth County Tuberculosis program. It will assist to the extent of its ability with both adult and children's school clinics. It will furnish much of the literature. In the event more active cases of tuberculosis should be discovered than can be cared for in the local sanatorium, the

State Sanatorium will take the overflow for treatment, under the same conditions as patients from other counties.

Tuberculosis Associations. Local, state and national tuberculosis associations approve such a program for the control of tuberculosis in Forsyth County and will assist in every way possible with such a program.

Dr. Louis Dublin said that when the death rate got below forty per hundred thousand it would be a negligible factor. Another thing he predicts is interesting, and that is that there is going to be an even more rapid decline than that shown by the graph as the average for the last thirty years, and his prediction is based on the fact that we know so much more about tuberculosis than we did even ten years ago. That is rather surprising, I know, unless it is called to your attention. But if you will stop to think you will remember that ten years ago we did not know how to diagnose tuberculosis in the child—nor even eight years ago. We did the very same kind of examination eight years ago that we are doing now, but we did not know how to interpret the X-ray plates, and there was no one else in the world that could teach us. We have now found out, and we have found beyond a reasonable doubt. that when a child is infected with tuberculosis some other case—an open case —has infected him, and usually it is in the home. That person very often has a chronic cough which is called bronchitis or something else and is not suspected of having tuberculosis.

This decline which Dr. Dublin predicts will only come to pass if we make use of the scientific knowledge which is available to us at that time, and the Forsyth County plan of control as presented to you is an effort to apply that knowledge. I know it is apparent ot every health officer here that his health department, with the health officer at the head of it, has a large share of the responsibility and work in bringing this thing about, and I commend it to your careful consideration.

DISCUSSION

Dr. C. C. Hudson (Greensboro): As I am very well acquainted with the various men who have had charge of arranging this program, I would expect just the product which Dr. McBrayer has given us. We would expect the most excellent recommendations in regard to the control of this disease. Dr. McBrayer has given us a rather complete program there for the eradication of tuberculosis which will apply to any county or any city in the State of North Carolina. The same things which he has said in this report apply to all our work. We are especially pleased with the very complete manner in which this thing has been worked out, so that all can coöperate—all the agencies concerned in the control of tuberculosis. If there is any problem in the state on which we can all get together—the health officers, the physicians, the parents, the teachers, and everybody else—it is this problem of tuberculosis. I was particularly glad to see that he emphasized that. He also goes into detail, as you notice. Not only are the general principles laid down, but he and Dr. Carlton and Dr. Hege have laid out who should do certain work, and that has all been approved by the county and city health departments, the State Board of Health, the North Carolina Tuberculosis Association, the National Tuberculosis Association, and (most im-

portant of all) the Forsyth County Medical Society as the basis for handling this problem.

We have very definite factors in the tuberculosis-control work. The first one of all is getting the cases. Dr. McBrayer goes very completely into that—who should make the diagnosis. Then we should have a sanatorium to take care of the cases. Forsyth County has a sanatorium of 180 beds, which in all probability will not take care of more than one-third of the active cases at any one time. So Dr. McBrayer recognizes that a large part of the cases will be under the care of nurses and under the care of physicians and under the care of clinics and treats that aspect of the matter in detail. Another part of the work is the preventive part, which is also carefully treated.

Another important part of the prevention of tuberculosis is the contact of children with tuberculosis persons. I think often we do not recognize that practically every person living in a house with a case of tuberculosis is likely to be an infected individual, every child living in that house is infected, and every such individual should be examined at regular intervals. That is one phase of the work which we must emphasize and reëmphasize and keep on emphasizing—to watch these children in homes where there are cases, watch them in the schools, see after them through our nurses, follow them up, when they begin to lose weight or get anemic and rundown have a careful check-up by physicians. That is one thing I should like to emphasize—careful checking up by the nurse of those children in the school, in the home, or wherever she has contact with them.

That is a most complete and well gotten up program for the care of tuberculosis, put into effect at the psychological time—just when the new sanatorium was opened. I received a copy of the program at that time and was delighted with it.

Dr. P. P. McCain (Sanatorium): I am sorry I did not get in in time to hear all the discussion. I know pretty much what was in Dr. McBrayer's paper, and I think this covers the needs for handling tuberculosis better than anything else I have seen. I think the two most important features in that plan are getting the doctors interested and working towards the control of tuberculosis and getting all contacts examined. I am glad to hear Dr. Hudson emphasize the importance of making not simply one examination of contacts and letting it go at that but of making repeated examinations. If we could find all cases of active tuberculosis and give all adults a good, careful examination every year and give all children a careful general physical examination, with X-ray pictures, every year, I think it would not be long before we could find practically all cases of tuberculosis in the early stages and in time to cure them.

President Hege: Our set program for the morning session is now completed, and at this time we shall be glad to have a word from Dr. Bass on the cancer-prevention work in North Carolina. I present Dr. H. H. Bass, of Durham, chairman for North Carolina of the American Society for the Control of Cancer.

REPORT ON CANCER-PREVENTION WORK

H. H. Bass, M.D., Durham
Director for North Carolina, American Society for Control of Cancer

No one dreamed thirty years ago that tuberculosis, with a mortality then of over 200 per 100,000 population, would be reduced until today the mortality is around 73. Cancer, in the meantime, has gradually advanced in its death rate from 43 per 100,000 to now over 112, which Pennsylvania reports in its last bulletin. Two years ago we organized North Carolina's division of the American Society for the Control of Cancer. The last General Assembly, seeing the need of the work in the state, appropriated $5,000 for the next two years for the study and control of cancer in North Carolina. This work has fallen upon my shoulders to carry out, in connection with the State Board of Health and the county health departments.

This report was prepared for the Conjoint Session of the State Medical Society and the State Board of Health. I believe, however, if cancer is to be controlled in North Carolina it will have to be done through the health officers and the public-health nurses of the state. It is a health problem that has been forced upon the health departments, it is a problem constantly on the increase, and cancer is taking the place of heart disease as the second largest cause of death in our state. I think I shall just read this report and then talk briefly about some points we might consider in the work.

(Note: This report appears in the proceedings of the Conjoint Session.)

There are some few points I should like to talk to you about that are not in the report, of which I have made a note here. Twenty years ago no one dreamed that cancer could be controlled. But there are certain facts that are brought to our attention by which we realize that it is as controllable as tuberculosis or any other chronic disease. Bloodgood says that proper education of children in the primary schools and of the public through the daily press will increase the knowledge of cancer and will reduce the mortality from 10 to 60 per cent—by education. He says that already, through education alone, we have reduced the chances of having cancer from 80 to 70 per cent—through education leading to recognition of the incipient stage, not letting it go until it is too far advanced for treatment.

Recent experiments carried out in laboratories on rats and mice with certain chemicals show that those working with these chemicals will develop cancer. For instance, hot tars produce cancers; betel-nut chewers have cancer of the mouth; pipe-smokers have cancer of the lip, or leukoplakia leading to cancer. From experiments carried out with these animals it has been found that it takes six months of irritation to produce cancer in them, from which it has been concluded that it takes at least from ten to fifteen years of irritation to produce cancer in man. Of course, we have as one cause of cancer prolonged irritation from chemical irritants. Nature makes an effort to get rid of these irritants, and thus the cancer cell comes. Infected nipples, chronic uterine tears, warts or moles, any of these chronic irritants retained long enough will produce cancer. Therefore arises the necessity of teaching the public

the danger of these things, of teaching the profession the necessity of attending to these things. I hope in the next twelve months there will be a campaign to teach the public the importance of these things, and I hope in the next report we make here we may report a decrease in the number of deaths instead of an increase. We can do it if we try.

Dr. C. C. Hudson (Greensboro): We have with us certain distinguished visitors: Dr. L. A. Crowell, President of the State Medical Society; Dr. A. J. Crowell, President of the State Board of Health; and Dr. Cyrus Thompson, a member of the State Board of Health. I am sure we would like to hear from them on this subject.

DISCUSSION

Dr. Cyrus Thompson (Jacksonville): I have nothing to say except to express my gratification at the papers I have heard here this morning, especially what has been said about the matter of the control of tuberculosis and what Dr. Bass has said about the matter of the control of cancer. The whole thing is a question of education. Everything runs along the line of education. The trouble with the world, you understand, is not poverty but lack of sense. Somebody said that the Lord must have been very fond of fools, for the reason that he made so many of them. I have my political notions, if you will let me refer to that a little bit—I have my political notions because of my confidence in the lack of ability of mankind to take care of itself. Mr. Thomas Jefferson said that all just powers of government are derived from the consent of the governed; I think all just powers of government are derived from the sense of obligation which the greater man has to the lesser man. For fifteen years I have promulgated this. I do not think, in public-health work, the parents of children ought to obstruct the welfare of the state, the generation that comes on; I do not think they ought to have anything to say about it at all. I think the wiser men and the wiser women of North Carolina ought to feel their obligation to take care of these lesser ones and to lift up these lesser ones towards the higher plane. I am not very democratic, you see, on that score; I am eminently wise. I have never kicked against the government of Almighty God at all, because I read somewhere "Shall not the Almighty Ruler of the earth do right?" Government ought to be in the hands of the wiser and better, and the lesser and more ignorant should not be allowed to obstruct the objects of the wiser. These nurses go out and meet a great many obstructions. I don't think the foolish ought to be allowed to obstruct them. The State of North Carolina goes out and tries to do great work; the foolish obstruct it. I do not think the foolish should be allowed to obstruct the wise objects of government.

Dr. L. A. Crowell (Lincolnton): You know, I think it is not a lack of sense with the people of North Carolina or that they are not educated along health lines; it is a matter of application. There is plenty of sense in North Carolina, if people would only use it. I think Dr. Thompson is wrong as to that. The trouble with the human race is not that we do not know plenty but that we do not use our knowledge. That is the trouble with the medical profession in North Carolina; the majority of us are asleep. If we would just get active and do things

we could accomplish something. We have plenty of brains but do not use them.

Dr. Bass's paper about cancer makes me think about what Will Mayo said once: "The only way to get rid of cancer is to make an early diagnosis and go in with a knife and eradicate it thoroughly. I think a lump on the eyelid or a wart on the face or anything of that kind should be treated with a great deal of consideration. It is a most serious matter. I think the most pitiful thing that comes up in our practice is to have a patient come in with a cancer of the uterus or a cancer of the breast and to have to say that we cannot do anything.

I do not know what Dr. Bass thinks about radium. I think radium has cured many cancers. But, on the other hand, I think many times we get hold of a case we cannot do anything with, and we just pass the buck. That is a sad thing to do. If we doctors of North Carolina were on the job as we should be we would make it a point to call people's attention to these things. They do not know; they do not know anything about it; they are ignorant, and we ought to inform them.

Dr. A. J. Crowell (Charlotte): I am not much of a talker; I am a fairly good listener. In the papers that I have listened to this morning there are two things that make me feel very grateful, and I am sure that every member of the State Board of Health feels very grateful for them. One is the tendency to get entirely away from the practice of medicine by the health officers. I think this very important. One man said this morning that he had a fractured limb in a pauper case that he was taking care of. That is not the work of health officers; preventive medicine is the work of health officers. I think Dr. Williams' idea of getting a man to look after the sick poor in a county is the proper way to handle the sick poor, and have the health officer give his entire time to public health work—preventive medicine.

Another thing that we all feel proud of is the work being accomplished by you public health officers and the physicians of the state as a whole. The reduction of the number of fatalities occurring in tuberculosis is wonderful. And now Dr. Bass comes along and, with that same optimism that we had years ago in tuberculosis for the reduction in cancer, which has been increasing alarmingly, makes us feel good. I hope he is right. Of all diseases, those we dread most or have dreaded most are tuberculosis and cancer, until the physicians of the country awoke to the fact that tuberculosis was on the increase, just as cancer is today; and I believe that we are going to bring the fatalities down and that the number of cases will be reduced very, very much. It makes me feel proud to be associated with the people—doctors and nurses—in public-health work who are doing such wonderful things for humanity as we are doing today. I feel proud to be in a humble way connected with an organization that is doing so much for our citizenship.

The program being completed, the morning session then adjourned.

AFTERNOON SESSION

The Association met in the ladies' card room and was called to order at 2:35 P. M. by the President, Dr. Hege.

Announcement was made of the appointment of the following as a committee on the president's address: Drs. R. S. McGeachy, Kinston; L. L. Williams, Fayetteville; D. E. Ford, New Bern.

HEALTH ACTIVITIES IN INDUSTRY

Dr. E. S. Thompson, Winston-Salem
Medical Inspector R. J. Reynolds Tobacco Company

Industrial medicine and surgery is a new specialty in this state. It deals with the human maintenance problem in industry. For many years our modern industrial concerns have regularly employed experts to study their expensive and complicated machines, in order to preserve their mechanism and obtain their maximum efficiency. The human machine, the most complicated of all, has been sadly neglected. Company surgeons have been employed for a long time but their duties rarely extended beyond the repair of injuries for which the company was liable under the old common law, or the workman's compensation law. The new specialty of industrial medicine not only furnishes adequate medical and surgical care when necessary, but includes all measures bearing upon the health, welfare, and working ability of employees; so that now medical supervision of the employee's health has become an essential part of the organization of many of our progressive industries. The modern employer has come to realize that the human machine pays a large return on the investment in its up keep and the efficiency of its whole organization is in exact proportion to the health of its employees.

Physical health is man's greatest asset; and as this is true individually, it must be true collectively, therefore the capitalizing of it should become a real factor in all industries. The result of a well organized industrial medical department should be as beneficial to the employer as to the employee.

To the employee it means more healthful and better working conditions, which stimulate production and increases wages. It helps prevent discontent and labor unrest. It means better home conditions, for which the plant furnishes a stimulus, and sets an example. It prevents causes of disease, accidents, and loss of working power. It discovers disease in its early stages and makes possible its rapid and certain cure. It treats accidents early and prevents infections and consequent loss of time and suffering. It prevents overwork, controls contagious diseases, and reduces the hazards of occupation.

To the employer it means a larger financial return, the extent of which it is hard to estimate. It increases the efficiency of the human machine, cuts down absenteeism, decreases labor turn-over and tends to build a good will between employer and employee.

The amount of illness in any organiztaion depends to a large extent upon the type of industry and efficiency of its medical department. In spite of the remarkable development of medical science in the last few decades, illness and defectiveness still persist, caused in part, at least, by preventable and avoidable conditions. Most of the misfortunes of life, of poverty, of broken homes, etc., are caused by disease—the common misfortune of all. Sickness and the cost of it, a

problem so large as to touch every individual life and so important in our industrial as well as our political life, to be a matter of real concern to every one who has risen to the level of citizenship. Those of you who have read the reports of the "committee on the cost of medical care" in the United States will see that the fields are still white unto the harvest. The average individual between the cradle and the grave spends one-fortieth of his time in bed because of some incapacitating illness. The average worker loses two per cent of his time, or a fraction over seven days per year, due to some disabling disease. Hence approximately one-fortieth of our population is continually incapacitated to earn a livelihood. Reliable studies indicate that where there is one person sick there are at least two physically impaired to the extent of from ten per cent to fifty per cent of their efficiency. Estimating that there are about thirty-six million wage earners in the United States, you can easily see the bigness of this problem.

The cost of sickness, doctors, nurses, hospitals, loss of income, loss of production, etc., plays a vital part in the economic status of our whole population. The annual expense to the people of the United States for medical services is estimated to be in excess of two and one-half billion dollars, or about twenty dollars per capita, or approximately one hundred dollars per family. The average wage earner's family, according to studies conducted by the U. S. Bureau of Labor statistics pays $60.39 per year for medical service. If we consider the loss from decreased wage earning due to sickness and accidents, plus the expense of medical service, you will easily see how the entire program of sickness is one that the industries must reckon with; because the two major problems that are facing them today are: (1) Cost of production. (2) Purchasing power of the people. Just what part each organization would play in helping solve this tremendous problem of sickness and associated misfortunes, is one that must be worked out to fill the needs of its own environment. Each separate industry has its own peculiar hazards, and yet all have a common problem—that of a wage earner sick and unable to produce.

As a further proof of the need of "Health Activities in Industry," an act of our last legislature made it obligatory on industries that they take into consideration the accidents which their employees sustain while in the performance of their duties, as practically every other state in the Union has done. For every accident sustained sufficient to cause loss of time for over seven days must be paid for in part by the employer plus all medical expense. Hence all modern industries should be continually taking stock of their human machines, so that they may function as nearly one hundred per cent as possible.

The R. J. Reynolds Tobacco Co. has maintained an organized medical department since 1919 and its work has justified its existence. until today it is almost an indispensable part of this large and efficient organization. Our equipment includes a general dispensary or plant hospital in connection with the employment department located on the ground floor of our new nineteen story office building. In here we have dressing rooms for applicants, examining room, accident room, operating room, X-ray department, two wards, and a fully equipped dental de-

partment, with one doctor, one dentist, and two nurses all on duty all working hours of the factories. In each factory we have a first aid station with a graduate nurse in each. We have ten such stations.

The examination of applicants for work includes first an interview by the employment department, then a routine physical examination. The doctor here has a double duty: (1) that of weeding out the unfit; (2) classifying the others according to the work they are able to do. Here it is essential that the doctor know the kind of work each applicant is expected to do. We divide all applicants into three classes: Class A: those able to work any where they are needed. Class B: those able to do limited work due to some physical condition. Class C: those rejected for work due to some contagious or infectious disease, or some deformity which incapacitates from work. Each applicant employed is required to be vaccinated for smallpox unless he shows evidence of immunity. After examination applicants are returned to the employment department, and sent to the different factories.

If an employee gets hurt while working he or she is required to visit the first aid station immediately and receive treatment for the injury, however trivial. If the injury is of a more serious nature the patient is sent at once to the plant dispensary. No patient is kept over night, so that if the patient is not able to return for treatment they are sent to one of the hospitals in the city. One of the most important points in keeping injured people from losing time is to treat the injury immediately. This prevents infection and makes the injured better satisfied. The fact that you have medical service available near the injured's place of work stimulates a wholesome relationship between employer and employee.

Medical cases go through the same routine as accident cases. If an employee gets sick while on the job he is sent to the first aid station and the nurse in turn sends him to the doctor if necessary. Our examination is as nearly complete as we are able to give in an office visit, including laboratory work, X-ray, dental, etc. If the employee is too sick to return to work he is advised of his condition and sent home with the instructions to get his family doctor, if the condition does not clear up as it should. Before any sick employee is allowed to go home he is required to visit the medical department and is excused by that department with a note to his or her foreman stating why and probable time he will be out. Any employee who is out from work on account of sickness for more than three days is required to visit the medical department before returning to work. In this way we prevent many sick cases from coming back to work before they are well. Any employee who is a member of our group insurance plan and is out sick more than seven days is eligible to draw compensation for time lost. The amount received will be in proportion to the salary sick employee made while at work. If he dies the beneficiary will be paid immediately upon proof of death, a sum in proportion to the income of the insured during his last year of work.

The dental department is open all day during working hours and anyone in need of dental work gets a permit from his or her foreman and is then sent to the dental office by appointment. Here we do proph-

ylaxis, extractions and a moderate amount of filling. This department does its most good in the education of the people as to the needs of dental care, and is looked upon very favorably by the dental profession in our city.

The following from last year's report will give you some idea of the amount of work done:

Number of patients for extractions	2,538
Number of patients for prophylaxis	427
Number of patients for fillings	363
Total number of patients	3,328

A record is kept of each employee from the time he enters our employ. In this folder is the record of his physical examination on entrance, the accidents he has had, times he visited the medical department and cause and any other information that we know that pertains to his health. These folders are filed in the medical office and are worked each week into a live and dead file, so that we have at all times easy access to as complete a medical record as we are able to get on each employee.

The magnitude of the work we are doing in the industry of R. J. Reynolds Tobacco Company will be seen from the following summary of our last year's report:;

Number of medical cases treated	32,836
Number of accident and surgical cases	31,530
Total number of cases	64,366

This is an average of about six visits per employee during the year, exclusive of return visits for dressings in surgical cases.

In addition we gave complete immunizing treatment for:

1. Typhoid to .....3,102 people
2. Smallpox to .....1,119 people

Industrial leaders today have come to realize that the greatness of their industries is not measured by the number of their machines nor the size of their buildings but by the human relationship that exists therein.

DISCUSSION

Dr. E. E. Robinson (Concord): It is a great pleasure to be here with you today; and I feel sure that, since this is about the first time that anything like this has been discussed in one of these meetings, all of us have really enjoyed Dr. Thompson's paper. There are several items I should like to discuss. I am connected with the Cannon Mills Company in Kannapolis, the great towel manufacturing center. Although our medical department has been established only a short time, being only about a year old, it is established on about the same plan as that of the R. J. Reynolds Tobacco Company. While, of course, we have not been able to complete our plans, we feel justified in doing anything along that line that we can do. Since we have had our medical department we have cut our accidents just about fifty per cent. At each plant we have an organized safety council composed of the overseers, etc., in the different rooms. Each week they make an inspection of the

plant from bottom to top and correct anything that they see is wrong. I think Dr. Thompson will agree with me that most of our accidents are due to negligence on someone's part in not having something fixed or letting a nail be in the floor, etc. A lot of nail wounds are received in that way. Of course, you know the cost of the medical side of an industry is bound to be great where there is not an organized medical department. One thing of great interest to me that is due to these safety councils is that the number of accidents has decreased considerably. The second item is the insurance. Of course, the Cannon Mills carry their own insurance. But the insurance premium is a good deal less where there is an organized safety department and where there is a medical department, where accidents are looked after immediately after they happen. That is one of the greatest things we have done, to look after accidents right after they happen.

I should like to ask Dr. Thompson what is the cost of his present organized medical department as compared with the medical service several years ago.

Dr. L. A. Riser (Greensboro): The plant that I represent, of course, is not an industrial plant, but yet it is a group in which we have the health conservation system at work—the Pilot Life Insurance Company. We have about 150 employees there. There is one thing I noticed was not mentioned in the paper which we have; we have a system there that if an employee is present for a certain number of days an honor day is given him. There is always a certain number of chronics that come to any doctor or any man doing industrial work, I think. We started a system there of making a record of everybody that reported to the doctor's office and putting it in the file. As you know, there are some chronic patients that come every time the office is open.

We have very little accident work to deal with, but we do give our employees a physical examination twice a year. We have no dental department but are hoping to get that organized. We refer cases to the family physician—give them a little treatment there, but very little. Of course, if the case is severe at all, we immediately send it out.

We have had a few employees that were down in weight and rundown that did not gain weight when we went to our new building. Most of the employees did. I persuaded the company to let two of our young ladies have a month's vacation this year, which was really rest in bed. They came back so much improved that I think the company is persuaded of the value of it; they have improved so much in their work. These two young ladies had really nothing the matter with them except that they were just tired from working steadily along day after day, and two weeks were not long enough to get them back on their feet again.

Dr. J. R. Hege (Winston-Salem, President): I think this paper gives us a means by which we can approach commissioners and others who give us our money. If industries like the R. J. Reynolds Tobacco Company, etc., can put on one or two doctors and several dentists and ten or twelve nurses in order to increase the efficiency and earning power of their employees and can afford to spend the money to do that, why should we not be able to get enlarged appropriations for health work in

our schools, where we are handling children? I knew that this work was going on, and I wanted this paper presented to you. It is a cold-blooded business proposition with the R. J. Reynolds Tobacco Company. Of course, they are interested in the welfare of Winston-Salem; they are distinctly interested in that; but they get their money back for every dollar spent in this—there is no question about that; and I think the same thing would be true about our educational system. I think there is not a single consolidated school that should not have a nurse visit it every day. If one factory is having that service, where there are adults educated to take care of themselves, it is needed all the more for our helpless children.

Dr. Thompson (closing the discussion): I do not know that I have anything else to say, except in answer to Dr. Robinson's question. As to the cost, it has increased each year since its establishment, but the company has felt that its cost has been justified. For instance, under the Workmen's Compensation Act, a flat reduction is given where there is an organized safety department. The actual saving to the company is hard to estimate, as I said in the paper—just as in public health work, when you prevent a sickness it is hard to estimate how much you have saved. We have not cut our accident frequency down very much since I have been there, in the last eight years; but we have cut down the severity of our accidents, so that the time lost and earning power of these workmen has been decreased very much. It has decreased so much that under the old laws, before the Workmen's Compensation Act, we got as much as fifty per cent reduction in our insurance rate in one year due to decreased loss of time by workmen on account of accidents. If you can enlarge the health side as well as the accident side of your employees, there is no estimating how much you can save, not only to your employees but to the community as well. As you all know, the larger the community, the greater the amount of sickness and the larger the job for charity. So anything you can do to prevent sickness is a large factor in the well-being of that city. I think Dr. Carlton will bear me out in saying that anything our organization does reflects to the community's credit in the statistical data he collects on that community.

WOMEN'S OPPORTUNITY AND RESPONSIBILITY FOR THE HEALTH OF OUR PEOPLE

Mrs. Charles R. Whitaker, Southern Pines, N. C.
Chairman of Health, North Carolina Federation of Women's Clubs; Vice-President, North Carolina Tuberculosis Association

Mr. President: We believe—that women have a remarkable opportunity as club women and citizens to advance and support public health work in their community and state.

We believe—that their activities should be founded upon knowledge of existing conditions that surround them.

We further believe—that all activities should be undertaken with both the knowledge and endorsement of local or state health authorities.

That all health activities initiated by or promoted by women in clubs should be a definite part of the local or state health programs, correlated with existing work or looking toward the formation of new

and permanent work, with the *aim* of *strengthening the work* of recognized health agencies.

The problems of the community cannot be solved by any written formula applicable to the country as a whole, but must be worked out largely by the interested groups in each community with the county health officer, meeting the conditions peculiar to the section itself, as these conditions may arise, and if necessary, collaborate with the proper officers of the State Board of Health.

It has been truly said—"That the only sure foundation stone for the edifice of public health is the close and sympathetic association of enlightened, intelligent medical men in private practice, with trained local health organizations, coördinated and assisted by a thoroughly organized state health department, provided with sufficient personnel and equipment to exercise those functions which cannot be carried on efficiently by local organizations."

Women are the mothers of men, their wives, sisters and friends, and many times man's inspiration and guide. Women are also citizens and the meaning of citizenship, like the duties and responsibilities of women has in the past few years undergone remarkable changes. Citizenship. No longer does the word pertain only to one's political duty, it has taken on a deeper and a broader meaning. Now it is accepted as pertaining to "*all* of life's social and human relationships."

I am a Jeffersonian, hence believe home, state and states's rights should be considered first. So we say women in the home and as citizens may well study to better the health conditions of their home, community and the commonwealth.

Our health program accepted by the General Federation of Women's Clubs, recommends the Community Health Study Campaign, which has two objectives:

First—Acquainting the local clubs with the existing health conditions in the community.

Second—And the most important item is that health studies create a community consciousness for *health* needs, for example, the great need for a whole time health officer if there isn't one; for public health nurses; for clinics; for health camps for children, for sanatoria, general hospitals, etc.

Our nation is moving forward, or faltering, upon the feet of little children. If faltering, the parenthood of our nation is to blame. Let us then remember that one who aids a child helps humanity with an immediateness which no other help given to human creatures in any other stage of human life can possible give.

Luther Burbank said—If we had paid no more attention to our plants than we have to our children, we would now be living in a jungle of weeds. Realizing this deep founded truth we see how very important it is that the doctor's, our health officers, our county nurses, welfare workers, mothers and club women combine and use every available means to impress upon the people the great need of good *health* for our children.

Consider, will you, the health of the mother, the infant and preschool children. The counties receive from the State Health Depart-

ment and Federal Government, appropriations which are matched by itself. This money should be wisely used by our county authorities and health workers.

Disraeli, one of England's greatest statesmen, said "The public health is the foundation upon which rests the happiness of the people, and the welfare of the nation. The care of the public health is the first duty of the statesman."

Washington has many places of interest and beauty, one scene which left its impress upon the mind was in the poor section of the city where American and foreign born live side by side and experience life's weals and woes, and a few of its joys. At Eastertide when the cherry blossoms were full blown and the world was awakening to the call of spring and new life, the organ grinder was gathering the children's pennies, the children were happy and dancing to his music. It was fascinating to watch them—the new born—the new generation, swaying and stepping with pretty little mimicries and gracefully invented steps all their own; with muscles that moved swiftly and easily, and bodies that moved fairy like and airily, weaving rhythms that were never taught in dancing schools. Some of those children were brighter than others and all were smart. They had active imaginative minds. Their capacity for throwing themselves into the realm of romance was remarkable. A joyous life was romping in their blood, their body, their brain, they delighted in music, reveled in color, and a number of them were beautiful of face and form, under their dirt and rags.

Sad but too true there is a Pied Piper in Washington who steals them away. They disappear. One never sees them again or anything that suggests them. You may search for them among the grownups and when you search, you find stunted forms, diseased, marked faces, dulled minds, no grace, no beauty, no nimbleness of mind or body. You see a woman, not old, but marred and twisted, deformed, bloated, sodden and hopeless, lift her skirts and endeavor to execute a few grotesque lumbering steps. It was a hint that she once danced by the organ grinder's music. Those few awkward steps were all that was left of the promise of childhood. In her diseased body and in the fogged recesses of her brain had arisen a faint memory that she was once a happy girl.

The crowd of children closed in, little girls were dancing beside her with pretty graces she could but dimly recollect, but she could no more than parody with her body. Then she gasped for breath, turned white, stumbled out through the circle of dancers and the little girls danced on. What caused this human wreckage? Disease. So many lives blighted through the call of the Pied Piper—Disease. Thus the children that once possessed all the qualities which make for noble manhood and womanhood, are throttled by the Pied Piper hunger, want and disease, and like an infuriated tigress he turns upon, destroys and rends their bodies, and blots out light, laughter and hope, and moulds those it does not kill into forlorn saddened creatures; longing for death yet dreading to die.

Yes, Disraeli is correct when he says public health is the foundation upon which rests the happiness of the people.

Disease—means disaster, and may be found in an individual, a

state, or nation. *It can be avoided* to a *greater* or *less* extent, how? Through health education of the classes and the masses, by doctors, health officers, county nurses, welfare workers, mothers and club women.

Permit us to say teaching of health and health habits in our schools, should be enrolled, in a workable state law, governing our schools. The accumulated experience of health education in the United States and elsewhere, has served to focus attention upon the *importance* of the *school period* in the *establishment* of *good health habits.*

It is evident that this health period must render the best returns for the efforts invested in teaching the child the rules of proper living.

Next to the home the school is the most logical place for health education and if the parents are not themselves equipped to teach adequate behavior, the school's obligation is imperative.

School children are forming their habits for future life. Their mental attitudes toward health, and its conservation, their personal hygiene practices, and each day's health behavior can be more easily affected during this formative period than at any other time in life. It is very fine educational psychology and here again can our influence be brought to bear.

Health education can be incorporated into and made an important part of our schools and our educational routine. We believe that health education in the school is very essential to the upbuilding of a healthy, happy adult and nation. The material side of life has no need of emphasis, we have examples of this on every side; within our national life for many years the United States has had bureaus for better cattle and livestock and only in recent years have they organized a children's bureau.

Health education in schools has *been attempted* but *not fully achieved* and *will not be* until a *strong sentiment has been created for it.* Here again comes the work of the health-minded citizens. It constitutes, in effect, an objective of great difficulty. Then let we who are interested, work on and on, learn what are the outstanding obstacles that hinder the cause. There are, we find, several obstacles. First, we need to arouse the sentiment of health consciousness in the hearts and minds of parents and people, through every available avenue. Second, we must have a suitable competent corps of teachers, informed on the essentials of health promotion and conservation. Third, these teachers *must be qualified to instruct.* Fourth, the laws of our land must be made to prescribe a regular course of health education in the curriculum of our schools.

Upon inquiry we find many books written on the subject of children and child health, but what of a concrete thesis, for proper health study in schools? We are not aware of the existence of one. So the uninitiated when attempting to inform themselves on health education are confronted with a great mass of material, varying from the most authentically desirable but unimportant, to the most vital teaching and it is most difficult for the uninitiated to select and intelligently classify the fundamentals of health studies for the pupil. Here and there are found health education curricula for teachers' training, developed and utilized, in the individual institutions, but we have not found such a

crystallized study of health education for the child that is available for the teacher. There should be a series of these studies as suitable for the teachers as English and other school courses. As there is not, this item should be solved in some workable manner, before a meritorious school health program may be said to be operative.

Briefly, then, *school health education is most vital to our nation*, and to carry on such a program, our statesmen should feel with Disraeli and give us first, available teachers who know the facts of health education. Second, teachers who know how to teach these facts, and a school curriculum that will enable the teachers to teach health education as they do the three R's.

This subject cannot be concluded without mentioning the work of the North Carolina Tuberculosis Association along this line. In the matter of health education as in so many other important things, it was like John the Baptist, crying in the wilderness, etc. It was the pioneer. It was the North Carolina Tuberculosis Association that brought this important thing to the attention of the people of our state and popularized the idea and the fact. They are an unselfish group. They are always willing to lead our people into the doing of important things and then gently and quietly fade into the background, and let others go on with the work receiving such plaudits as may accrue. We thank them. We appreciate them, and what they have accomplished for the people of our state, and other states for their splendid influence cannot be bounded by state lines.

Could we appeal as we should like to, to the womanhood and the motherhood of our land, and could we impress upon them the very great importance of health, and cause them to fully realize that health is the soul that animates all the pleasures of life, for the child and the adult, in all the ways of life—that no love, no honor, wealth nor power, can give one cheerful hour of happiness when we have not health, could this realization come more fully to us, we would then strive with all our might for *Health*.

Pause for a moment and envision a world without health, without our medical profession if you can; would it not be a very dreary picture? Ponder the broad and busy field in which they labor. We are and should be very grateful for the lives, influence and labors of the Doctors and health workers within our state—grateful for the high ideals they have for their profession and for the welfare of the people.

If ever childhood, womanhood, and the whole human race is lifted to its highest practicable level intellectually, morally and physically, to the medical profession will go the award. They are Christ-like in their ministration to the child and its needs. Christ performed his miracles of love and mercy at the urgent request of the parents for their suffering children, so does the true physician of today. So must the mothers and women join together with the physicians in working to secure for their children and their neighbor's children the opportunity of becoming happier and stronger and healthier children. The *motherhood if awakened to their children's needs* would be *a mighty force for good* in preserving the health of our children.

"Mother, where have I come from? Where did you pick me up?"

asked a precious baby of her mother. She caught the child to her heart and answered, half laughing, half crying, "You were hidden in my heart as its desire, my darling; you were represented by my dolls in my childhood games; and when with clay I molded objects of beauty, I made you; you were enshrined in my soul as my household deity; in worshipping God your face was ever present and a part of that worship. In all my hopes, and my loves, in my life and in the life of my mother, you were there. In the life of the deathless Spirit who rules our homes and our destinies, you have been nursed for ages—and now God has given you to my care, and has made me responsible for your life—I'm responsible for your health, your happiness, your moral and spiritual life. Through you I live again."

The great basic reason for *all work* for the *health, happiness, moral, physical* and *spiritual well being for the child, is love.* Love for children and a desire for service. Interest in them, an abiding respect, for correct living and for sound healthy bodies and minds.

These are the sympathetic notes that we of today must sound for the oncoming generations. For *upon us,* who have the privilege of occupying the vantage point of the hilltop, from which we can look back over the past, and forward with a broad vision into the future, devolves the great responsibility of guarding the inheritance of health zealously, and passing it on with clean minds and reverent hands to those who stand ready to make the ascent of the hill; and we must see to it, that the shoulders upon which this responsibility shall rest are well trained morally, mentally and physically to carry on until the time arrives for them too, to change this responsibility and place it upon well trained and younger hearts than their's. Good deeds never die. He most lives, who thinks most for others; feels for them, and acts best toward them.

DISCUSSION

Dr. John Symington (Carthage): I wish to thank Mrs. Whitaker for this most excellent paper and want to emphasize one or two things which she has said.

The subject of the paper is the opportunity and duty of the woman in health. The writer has said the duty and opportunity of women is in the home, and that is what I want to emphasize. If every mother influences her children to carry out the laws of health, then practically every child will be led aright, for there are comparatively few motherless children. And the wife in many instances has to influence her husband.

I was called out the other day to see a tonsil case. I had given the opinion previously, and the medical practitioner had also given the opinion, that the tonsils should come out. I found the mother was very willing to have the operation done when I reëxamined the case and said the tonsils should come out, but she said her husband objected. I went to see her husband, and he promised to think it over, but I also told her to use her influence with him, and it will probably result in the tonsils being removed.

Women also have an important influence on home sanitation, which is one of the fields of greatest usefulness, in personal hygiene among

their own children, in advising correction of defects in their own children. There is opposition to other measures besides the removal of tonsils—phimosis, for instance; I find from ten to fifteen per cent of boys in Moore County have phimosis. Then there is the matter of tuberculosis.

Many women have opportunity for work outside their homes. The speaker to whom we have just been listening has done a vast work along that line. The tuberculosis workers are very important and also the school teachers. The matter of school sanitation is very important. Then personal hygiene among the children, which would probably lead to prevention of enlarged tonsils. Then their influence in getting vaccination performed. In this state, and doubtless in other states throughout the country, there is prejudice to having certain forms of vaccination. The teacher can break that down. There is some opposition to physical examination, too, and the teacher can teach them the benefit of periodic examination. And the teacher can open the door to the public health officer or the visiting nurse to come and talk on health topics.

The women health workers in Moore County have done very important work indeed. Some of the work accomplished by the health and welfare association is as follows: First of all, it raised money to pay for half the salary the first year of the health officer and then raised half the salary for an infancy and maternity nurse. It then raised half the salary for ten months for a sanitary inspector and raised the salary for a whole year for a general nurse. That is some of the work the ladies in Moore County have accomplished, and I think we owe them a great debt.

In conclusion, women are so woven into the fabric of life that if they were withdrawn the fabric would be destroyed.

Dr. Louise M. Ingersoll (Asheville): I have been very much interested in Mrs. Whitaker's paper and in her reference to the women's clubs. We have a slogan in Asheville, if you want to get something done bring it before the women's clubs and get them interested in it. One project that has been very interesting to me is social hygiene. I have taught it in girls' schools and various places, and I have found how much it is neglected in the home. It seems that should be taught in the homes by the mothers. I was wondering while Mrs. Whitaker spoke if in the women's clubs could not be instituted a course in biology for women, to be taught by a physician or by a well trained nurse, so that the mother can tell the simple facts to her children.

Dr. J. A. Morris (Oxford): In accomplishing anything we must find a starting place. Where would you start in this health education? If you attempt it in the schools and find what I find, that the children are on a par with the teachers, before you are going to have it you have to have teachers. And so in my own idea the place to begin this thing is that teachers shall be required to stand an examination on health teaching, just as they do on any other part of their duties in the school room. Then they will begin a program that will make the future mothers and fathers know something. Until that is done I don't believe we shall accomplish much with our schools.

Dr. J. R. Hege (Winston-Salem, President): I notice the word in the title, "for" health. I do not know of anything more important for health than the women, particularly the women's clubs. We must not, however, forget the press. It is a great asset for the public health to have a newspaper that is in sympathy, that is public-health-minded.

Mrs. Whitaker (closing the discussion): In speaking of how we can secure health, it seems to me that this splendid body of men, physicians who are so deeply interested in health, are the people that should bring before our legislature the necessary bills to have health taught in the schools, in the curriculum. In so doing, of course, our teachers have to learn about these things first; and that is why I advised that a book be written to that effect, so that they can teach health, and then have our laws so framed that it can be taught in the schools.

I appreciate the courtesy that has been shown me in giving me this opportunity this afternoon, because I am very much interested in the health of the people of North Carolina, and unless we women, as club women and as mothers, take the work upon our shoulders and encourage the doctors and health officers in our counties and in our state to have health taught in the schools we shall not advance very far.

RECORD FORMS, CHARTS, GRAPHS, ETC., IN A HEALTH DEPARTMENT OFFICE

R. L. Carlton, M.D., Health Officer, Winston-Salem

The first aim and purpose of the health officer is the prevention of communicable diseases. That he may know that his staff is functioning properly and that cases of communicable disease are being supervised from the time of report until release certain records are necessary. The size of the community, the number of cases of communicable disease occurring therein and the number of health workers will largely determine the type of records needed. The small organization, where the health officer is both administrator and field agent, will require a minimum number of record forms, but this minimum requirement is absolutely essential—while in the larger department where the health officer must depend on others for much of the work to be done and where the numbers of cases of communicable disease are larger, a more elaborate system of record forms will be needed.

Communicable Disease Records. Let us consider those records and blank forms needed in the every day handling of this part of our work. First in the natural sequence of events are records of immunizations. The "Toxin-Antitoxin Record" card for example shows the name, address, school, color, sex and age of patient and dates of treatments, first, second and third and blank line for the administering doctor's signature. A very simple record. It's almost too simple. Our next supply will have a blank space for Schick test, result whether positive or negative and three blank spaces for additional treatments in case the Schick was positive. Toxin-antitoxin records of pre-school and school children are all placed in two alphabetical files—one for white and one for colored—not filed by schools because the child changes schools too rapidly.

We do not think it wise to have for this record a combination card which carries also the signed request (not consent) of the parent for the immunization to be given. In our schools we send to the parents a letter explaining the value of toxin-antitoxin for their school child and asking them to sign the blank space at the bottom of the letter rather than send home a card which is to be used as a permanent record and have that card come back all broken, dog-eared or carrying part of Willie's all-day sucker. The circular letter with blank attached is very satisfactory.

"Train Ticket to No-Diphtheria Town." On the day the child receives his first dose of toxin-antitoxin he is given a "railroad ticket" with four blank spaces to be filled in as the succeeding treatments and the Schick test are given. In most instances this ticket is kept and proves to be an interesting feature to both child and parent. Such tickets are supplied by one of the big life insurance companies.

Forms similar to the toxin-antitoxin record except in different colors are used for smallpox, whooping cough, typhoid, etc. Every person who receive any immunization treatment whatever at the hands of any public health worker should have that act properly recorded in the health office.

In spite, however, of all the good intentions and excellent work of most health departments in prevention an occasional case of communicable disease will occur. Let us follow one of these cases through the various records necessary for its handling. Dr. John Gray telephones in a case of scarlet fever in a child John Brown, age 7 at 132 Green St. Of course within the next twenty-four hours the doctor follows his telephone report with a written report on the regular postal card form of the U. S. P. H. S. with which every one is familiar. The nurse for the Green Street district is given a memorandum, a blank filled in with all available information regarding the case, its location, who reported it, etc. A carbon copy of the information given the nurse is kept by the office secretary for reference in case there should be delay in receiving nurse's report, etc. Such memorandum slips are destroyed after history of the case is completed. Nurse visits the reported case, institutes the usual isolation and quarantine procedures and turns back to be filed in the office her case history, which, in this instance discloses the following facts: the seven year old patient is a student at Wiley School; a sister, Margaret, is a student also at Wiley; an older sister, Jennie, is a high school student; the mother is the patient's attendant; the father is employed in a meat market; the family's milk supply is Forsyth Dairy; date of visit and condition of the quarantine are noted on the card. On the same day the history is filed the secretary fills out in triplicate two report forms notifying the superintendent of schools of this case of scarlet fever. He, in turn sends one copy of each of these notices to the principals of Wiley and high school respectively, because the scarlet fever patient and one sister are Wiley students and one sister a high school student—so there are copies of these two notices in school superintendent's office, principal's office and health office. Another notification form is filled in and sent the Forsyth Dairy informing that company of the presence of scarlet fever in the family of one of

its patrons. A memorandum is given the director of food inspection who immediately communicates with Mr. Brown regarding the possibility of his continuing to handle meats while his son has scarlet fever. The doctor's report card of the case is copied—the copy sent to State Bureau of Epidemiology and the original placed in the health office files. Finally an index card is filled out for the case—all the essential items regarding the patient being mentioned and this index and the case history are filed—the index carrying a tab or flag marker calling attention to it four weeks in the future. Arrangements are made for Margaret and Jennie to live at the home of a relative during Johnny's quarantine so seven days after last exposure to Johnny they are given by the health officer or school physician "permits" notifying their school principals they are safe to return to school following their exposure to scarlet fever. Four weeks from the date of onset another memorandum slip is given to the health officer or his assistant saying that release for the case is requested and mentioning dates of onset, quarantine, etc. The case is visited by a physician of the health department, it is found to be ready for release, the memorandum is so marked and returned to the secretary who makes the necessary entries on history and the case is closed. Johnny, however, probably comes by the office next day on his way to school requesting his "permit" to be allowed to reënter his classes.

Record forms for other communicable diseases are very similar to these described for scarlet fever. A few exceptions apply to venereal diseases which require special forms, to tuberculosis which also requires forms more or less peculiar to that division and the case history card for typhoid is larger and more elaborate than is necessary for most of the reportable diseases. The very nature of the epidemiological survey for a case of typhoid requires more space and more details to be covered. The health officer desires to be able to transmit to the Bureau of Epidemiology when called on certain facts and findings without having to again go over the field of investigation so a rather large and detailed information card is used for typhoid.

Cards for each reportable disease may be numbered consecutively beginning with number 1 at the first of the year which enables the health officer to easily ascertain the number reported by the day, week, month or since the first of the year. Our cards for each disease are filed by months until the year is closed when they are then placed in an alphabetical file.

A card of considerable help in our office is known as the "ticker" card on which is listed all of the principal things which should happen after a case of communicable disease is reported and the clerk checks each item with the date or other desired information as it is received until the card is completed. For instance, a case of diphtheria is reported by laboratory findings. Our card lists the disease and patient's name, but address may be blank. Laboratory report positive, April 20, 1930. Physician: Dr. Smith. Physician's report—blank. Case history: date written in. Case placarded: same. Reported to State Department: date in. School attended: written in. Reported to principal, etc. Milk supply—reported to dairy, etc. Case charted—case located

on wall map. Until all those items are checked or properly filled in it is the duty of the clerk to keep busily after some one or more persons who have not yet carried out their part of the plan of communicable disease prevention. If there are a number of cases being reported—or indeed if there are only a few there must be some systematic manner of checking up or the result will be confusion and much lost motion.

Laboratory Records. In a laboratory for a city up to 100,000 population a limited number of record forms are needed. In our laboratory all examinations are carefully recorded daily in a book. A special record form pertaining to diagnosis and release cultures for diphtheria is used and filed in the office immediately after the examination of every such culture. A daily record form is used to show the distribution of culture media, vaccines, antitoxins, Schick test materials, Wassermann outfits, etc., by the laboratory.

Health Work in Schools. Forms for recording health facts of school children are important and should be used regardless of the amount of available medical and nursing help. The first record is that of the child's physical examination. It is not necessary to describe that card since it is the form supplied by the State Health Department and is familiar to all of us. In our work this form is used for recording the physical findings of the pre-school child who is about to enter school as well as the child who is already in school. The examinations are made by a school physician assisted by a nurse and the teacher. Since the record is designed to follow the child through several years of his school life it is filed at the school. Form letters of notification regarding any defects found are filled in and sent to parents of pre-school and of school children immediately following the examination.

At the beginning of each school year all children are given a rapid inspection by physician and nurse to find those who have not been vaccinated against smallpox and to discover any very obvious defect or disease. A sheet in duplicate is used for listing the children most needing attention, there being blank spaces for parent's name, address, child's name, vaccination, toxin-antitoxin, teeth, other defects and remarks. The teacher keeps one list—the nurse one. This sheet guides the nurse in her follow up work with respect to securing corrections, etc. Form letters with request slips attached are used in diphtheria prevention work and when conducting special clinics for tuberculin test and physical examination. An exclusion slip is sent to the parents of every child not showing evidence of successful smallpox vaccination. Another exclusion slip made out in triplicate is used for children who are temporarily excluded for any cause—one slip being sent to the parent; one to school principal; and one to the health officer. These slips are signed by school physician or nurse. Reasons for such exclusions are shown on every such form and also on the nurse's daily report of her work. Other records used are the notifications of schools regarding communicable disease and permits for children to return which have already been mentioned.

Records of Dental Clinic for school children are those issued by the State Department of Health and need no comment.

Public Health Nursing Records. Our nursing service is largely a

generalized service combining school work, communicable disease control, infant welfare, etc. In only one instance—that of tuberculosis—is our nursing specialized. Records for nursing activities naturally include every thing done. The forms used in her school work and communicable disease supervision have been described. The nurse attends baby clinics or health stations where the principal record form is that pertaining to the physical examination of baby—a fairly complete history of his past and record the happenings to him for next several months as he visits the station. The nurse investigates the death of every baby under two years whose death certificate mentions diarrhea and fills out a 3 x 5 card with information regarding that baby, his milk supply, how fed and many other items—a valuable record. Another record form is that pertaining to free milk and ice distribution. A fund is turned over to the department to provide milk and ice for needy babies. This is primarily relief work but it has a decided health slant so our nurse investigates each request and files a record concerning it.

Then, her daily report is a résumé of the public health nurse's activities. It records school visits, number pupils examined, number excluded and mentions in detail on back of record card the reasons for exclusions, number home visits to pupils, visits to communicable diseases —mentioning in detail the particular diseases, clinics attended, number hours spent there, visits to sick babies and to well babies, number prenatal and postnatal visits, visits to midwives, number coöperative visits, visits of investigation and miscellaneous. This record faithfully filled out permits the supervising nurse or health officer to easily and quickly determine how this very valuable division of the staff is functioning, just what work is being done in almost every part of the health field and a summary at end of the month or year is not difficult.

Tuberculosis Records. The report card issued by the Extension Department of the State Sanatorium is used. Every case of tuberculosis whether reported by clinic or private physician has a 4 x 6 case history card filled out with the principal items concerning the patient and placed in the alphabetical file. A small 3 x 5 index card similar to those used for other communicable diseases is also filled in and filed by months until end of the year and then alphabetically. In the tuberculosis clinic the sheets sent out by the Extension Department are used for recording physical examinations of adults and children. Attached to each of these sheets as they are filed is the nurse's record, a blue sheet listing the dates of her visits to the patient, patient's condition—T. P. R., W't, etc., and notes regarding treatment, diet and progress. There is used in the clinic files an index-case history card, size 5 x 8, carrying more complete information than the 4 x 6 case history card in the office. Another card, 4 x 6, is the Tuberculin Test Record, used especially for children tested in the clinic and filed there. Finally, there is a combination card showing daily report of the tuberculosis nurse and the activities of the clinic. A rather complete record of all the activities of this special worker is possible and the clinic part of the record has much valuable information, such as number of visits to the clinic and stating whether coming for general instruction or for examination; number old cases reëxamined; number new cases and num-

ber suspects examined; the results of examinations—tuberculosis, non-tuberculosis, suspended diagnosis, etc.; number adults, and number children coming under clinic supervision; number tuberculin tests made and reactions; number old cases brought forward; number new cases reported by clinic and by doctors; number of patients sent to sanatoria; number dismissed; number died; number remaining under clinic supervision at end of month. Such records properly kept enable the health officer to readily ascertain the type of work being done in the tuberculosis division of his department and also to determine fairly accurately what the tuberculosis problems are.

Sanitation Records. Many persons still attach quite a bit of significance to things instead of to persons. An unclean stable or yard, a pile of garbage, a defective water closet, water in a basement and many other still less important matters are brought to the attention of health departments with suggestions in no uncertain terms that something be done forthwith. Such complaints must be handled. A complaint memorandum on which is noted the location of the nuisance in question, its nature, the occupant of the property, name and address of persons complaining, name and address of owner, name and address of agent of the property, probable cause of the condition, etc., is very helpful. This memorandum is usually filled in by a clerk in the office and given to an inspector for investigation. Such a blank is a time saver for the employee who takes the complaint and the inspector gets more accurate information upon which to begin his investigation than if the complaint were merely written out on a blank piece of paper.

As a result of his investigation of complaints and of his daily inspection trips conditions regarded as nuisances are found and reported on a "nuisance" card, 4 x 6, which describes the nuisance, location, owner and the responsible party. There are blank spaces for action taken, reinspection, result, etc. Nuisance cards remain in the current file until there is an abatement or other final disposition of the condition when the card is transferred to the permanent file. Blank legal notices are used for filling in and serving regarding nuisances, proposed sewer connections, etc. These being made out in duplicate, a copy left with the responsible party and duplicate filed in the office. A small reinspection card, 3 x 5, carrying just enough information to enable the nuisance to be found is given the inspector for his attention and report at the expiration of the time allowed for abatement in the notice served. The inspector's daily report card covers his activities concerning inspections, reinspections, service of notices, and all the miscellaneous duties of a sanitary inspector. Such a card is filed daily by every inspector in the sanitary division. At the end of the month summaries can be easily made.

Food Inspection Records. Not because the records of this division are less important but because of my time limit, they will simply be mentioned without description.

In our dairy work the State Board of Health report forms for inspections of dairies are used; there is a small certificate of tuberculin test turned in by the veterinarian; a large sheet for recording the laboratory analyses of milk; permit forms for the sale of milk and butter-

milk; a card record of application for permit for cafes and markets; permits for markets and cafes; a record of inspection of fresh meats—in duplicate; a record of condemnation of foods—in triplicate; a copy for our files, one for owner and one to send party from whom the present owner bought, if desired; a blank form notice to be filled in by inspector regarding violations at food handling places—this in duplicate; then there is the record card of the physical examination of each food handler and finally, the food handlers medical inspection card to be filled in by health officer or other physician of the department.

Records of Vital Statistics. The blank certificate forms for births and deaths, burial and removal permits and shipping certificate are those supplied by the Bureau of Vital Statistics and need no description. Fortunate is that health department which has in it the local registrar. To have prompt, ready access to these records is of no little significance to the health officer. In our department one of the employees is registrar. Immediately upon the receipt of a birth certificate a blank certificate of birth registration is filled in with the principal items concerning this new baby and bearing an impressive seal and registrar's signature is sent with suitable literature by a nurse to the mother. At stated intervals birth and death certificates leave our office for permanent filing in the Register of Deeds office. An index card, however, for every birth and death stays in our files. This card bears all the principal items of information concerning the birth or death and is a very valuable and frequently consulted part of our records. We have one alphabetical file for births and one for deaths for each year since this system was inaugurated several years ago.

One other record in this division is a card on which the clerk who handles the death certificates fills in all the data given on any certificate which mentions any reportable disease as either primary or secondary cause of death. This card is checked against the records of communicable diseases—many unreported cases are unearthed, by having brought to our attention the fact that this man had tuberculosis; that this baby had measles prior to his pneumonia which is given as the cause of death; or that another baby had diarrhea which our department would very much like to investigate and so on.

Health Worker's Daily Record. There should be a daily record made of every item of work done by every member of the health department. In our department this is insisted upon. Most of our workers use a card record such as those mentioned for sanitary inspectors and nurses; some use specially ruled books; others use special forms in pad. The form of record is not so important but it is urged that if a thing is worth doing at all it is worth recording. In no other way can a system of evaluation of the department's activities be worked out and by no other means can a monthly or annual report be compiled. Our school physician, who is also assistant to the health officer, fills in a daily record of schools visited, number children examined, number inspected, number consultations, number visits to homes, number examinations at office, and an itemized list of vaccines, antitoxins, etc., administered. The health officer also records number visits to homes, number consultations with physicians, complaints received, investigations made,

schools visited, incoming and outgoing phone calls, personal inquirers, number meetings of health board attended, number public health meetings, number conferences with nurses, social workers, etc. There is a blank record also for the general office on which is listed the numerous items of clerical and general work, such as number pieces of first and second class mail received and dispatched, phone calls, telegrams, reports made, notices issued, personal callers, etc. Also there is kept in the general office a list of the vaccines, antitoxins, etc., distributed to be combined with the laboratory list at the end of the month. Many of these items are seemingly trivial—but they are all worth while, they all require time in the doing of them and the matter of recording is one of so little moment or effort that we consider the job not done by any worker until his record shows what and when he did certain things.

Graphs and Charts. Statistics are dry, unattractive, sometimes repellant even for those of us who are really interested. Any health officer had much rather be doing some current live activity than studying post mortem tabulation. But when this statistical information can be placed before us in graphic form it becomes more attractive and more suggestive as to what our department may do both in regard to correction and production. Charts should help us develop our analytical thinking and investigation. Almost invariably every chart bristles with interrogations—why this increase? Or why that rapid decrease at this particular time? What happened that year? If our records are to be of any value to us they must be used and if graphs and charts will assist us intelligently analyzing records then they should by all means be employed.

The best known function of charts is for demonstration purposes—to show up facts. For the purpose of comparing and analyzing statistics, records, etc., it is not necessary for the user to be schooled in higher mathematics or to be particularly skilled in the use of drafting materials. Pencils, pens, a straight edge, simple charting paper and possibly some gummed colored tape are about all the materials needed. Complex charts should not be undertaken. They are not only difficult to prepare but are equally difficult to interpret and to the layman, who after all is the special individual we most want to interest, they mean nothing. Simple bar charts, the bars extending from a baseline horizontally or vertically and the simple line or curve charts are easiest made and most readily understood.

Facts presented by such methods do not require a trained mind for their appreciation since the sense of sight is among the commonest human attributes. A child can appreciate relative values when shown on a chart just as well as anyone and it requires less mental effort to grasp quantities when shown in this manner than by their expression through the use of figures.

No apology is offered for the charts from our office on display. It is only fair, however, to say that these charts were made for use in the office for tacking on to a display stand and not for a meeting of this kind, which accounts for the very narrow margin around some of them—the charts being mounted on cardboard after our request to bring them here. There is no expert draftsman in our office, as of

course you have observed—the simplest possible methods have been used, many rules for graph making have been violated and expert criticism of them is not desired nor expected. If the casual visitor who comes to our office, or the mayor who is inquiring regarding certain conditions or activities, or the club woman who is interested in infant mortality can glean from such humble graphs the information desired or can draw a lesson from some fact presented, the health officer has accomplished his purpose.

You will note these charts practically all represent certain facts or conditions over a period of years. This seems to be the most appropriate arrangement in a local office. For instance, every one can be readily interested in the typhoid chart of his community—especially if the curve is falling properly; he may be equally interested in a pellagra chart which is not presenting a satisfactory picture and the inquiring citizen will want to know why? And what is being done about it?

Similar charts to these covering a period of years may be made for the months of the year—comparing the incidence of a certain disease month by month.

Other charts comparing death rates for certain diseases between that particular city or county and the state as a whole may be prepared. But the average citizen and the average appropriating body are usually most interested in the facts pertaining to their own community and the health officer will therefore probably advance the cause of public health more rapidly if his graphs and charts place most of the emphasis upon home conditions.

DISCUSSION

Dr. D. E. Ford (New Bern): There are few of us, if any, that could carry out such an extensive and complete and comprehensive line of records as Dr. Carlton has described in his paper. Very few health departments have a medical assistant; the health officer has to do all the medical work; and in most departments the method he has of handling contagious disease would defeat itself, because the value of handling promptly one of the communicable diseases, especially the ones we can definitely control, comes in the speed and dispatch with which they are handled. When the health officer is the only medical man to do that, it seems to me the policy is to treat every case that is reported, and especially when the diagnosis is suspicious, treat it like a call from the fire department—get up and get the case at once. If the children are at school, get them home; don't wait until the next day to report to the superintendent of schools and various assistants in writing. Get the dairy on the telephone at once. Get that man home from handling his meat or working in his market. If he is a barber, get him home at once. Get that case isolated, then get your records, especially diphtheria, scarlet fever, etc.; also your first cases of measles in a community. Of course after an epidemic is started there is not much use losing any sleep, because you cannot stop the epidemic.

I have nothing to say about Dr. Carlton's description or the records. They are all fine, and if I had the help, the trained help, to make such records available and useful, the only thing to do would be to have complete records of everything. But the records have to be adapted to

your help and adapted to the size of your department. Graphs such as this, although apologized for by Dr. Carlton, are very, very necessary. People judge by what they see. They do not analyze; they go by what the eyes see. People visiting the department see this; they do not analyze. And it is especially useful with the people who decide how much money you will have next year for your department. They decide much more by these things than by the records you have in your files.

There is one other thing very useful in a county rather than in a city health department. In all rural districts the consolidated school is the center of interest, a center of pride or a matter of apology on the part of the people connected with that school. I have found it useful to have a large photograph of the school, 8 by 10, when first completed, and another one taken a year or two later, after the grounds have been improved, showing the improvements. With those photographs have graphs showing the percentage protected against smallpox (which should be one hundred per cent, of course), against typhoid fever, against whooping cough, against diphtheria; the number of physical defects in the different grades and the percentage corrected; the percentage of malnutrition; percentage of children under weight, etc. People waiting in your office will see the photograph and the graphs accompanying it and will be interested in them. That tickles the local pride, if favorable, and helps along the kind of work you are trying to do.

Dr. J. H. Epperson (Durham): I think Dr. Carlton has handled this subject in a very effective and efficient manner, and I do not know that I can add much to what he has said. I am particularly impressed by this display of charts and graphs, which to my mind are drawn up in a very attractive manner and give anyone a mental picture of the conditions existing in his community. I think such graphs are very valuable; I use them extensively in my department, and I think they are valuable to the department personnel as well. A glance at the graphs might make you think an expert is necessary to get them up, but that is not so. With a drawing board, white paper, a few thumb tacks, a T-square, and drawing crayons anyone can make such graphs—perhaps not as attractive as these, but some that will be highly effective.

Many of us have our own individual ideas about complaint forms, contagious disease records, and various and sundry forms for use in our work, and it might be hard to standardize and get a form suitable for use in the states as a whole. There may be conditions in the community which would render it advisable to have a form suited to its own individual needs. I am glad, however, that Dr. Carlton brought along some of his forms, because there is always room for improvement, and by looking over another man's forms and charts and graphs, etc., we may find ways in which we can improve ours.

Dr. L. L. Williams (Fayetteville): I personally think that this is a very timely paper, and I want to thank the president and the program committee for placing a paper of this type on the program for this year. I only wish that such a paper had come before this organization ten or fifteen years ago; I think I should probably have been better off. It took me some time to realize what records, and particularly graphs, mean.

Record forms, as has been brought out, are something to be decided by the individual officer in his particular department; but graphs are more or less standardized, and I feel there is a great importance to be attached to our graphs. It has been my experience that graphs are something that any health department, regardless how small the number of workers in that health department, can work up. They are very useful to citizens who come in the office, because they can get a mental picture of the health conditions in the community and see under what conditions you are working. And there is more necessity attached to them when you go before your hard-boiled officials to get more money for your work, because they want to be shown—particularly at this time, when everybody is standing on the street corner crying hard times. If every one here would go back home and make up a set of graphs to lay before the commissioners they would study them and you could lay before them the demands of the people. I think this is a very important thing, and I wish every health department could have these graphs.

Dr. John H. Hamilton (Wilmington): I feel that all of us who are health officers are very greatly benefited by Dr. Carlton's paper. There is one thing we must realize; that is, a large department can have much more complete reports than a small department. One thing we should bear in mind at all times is that reports should be the servant of the organization, rather than make the organization the slave of reports. I appreciate Dr. Carlton's bringing these forms and graphs here, and I hope we may study them. I do not want to be pessimistic, but it has been my impression that we regard forms as more or less our brain children; we like to look at the other fellow's forms, but when we want one we make our own. But I think we can make ours much better if we study the other man's.

I should like to ask Dr. Carlton a question—has he devised a record form yet which will enable him to answer all the questionnaires he receives?

Dr. Carlton (closing the discussion): Let me answer Dr. Hamilton's question. I am not by any means a good enough health officer to answer all the questionnaires that come. I think I have a desk drawer half full now.

ADDRESS

H. E. Miller, C.E., State Board of Health, Raleigh

There is a matter which has been very much before the health departments with respect to milk sanitation, and that is in reference to contagious abortion and undulant fever. The health officers have discussed it at various times, but there is another side which we have to consider, and that is the economic side as its affects the dairy industry. In all milk regulation, of course, we have to be concerned with the dairyman as part of it. There has been a lot of discussion about this topic that has done the dairy industry much harm; before there was really enough known about the subject to absolutely form any conclusions. I think even so far it is still too early to put into action any definite programs in that connection, until there is more information on the subject.

The State Board of Health and the State Department of Agriculture have been working coöperatively on this subject, and the Department

of Agriculture has given most excellent coöperation in it. Dr. Moore, the state veterinarian, has been spending a great deal of time on this matter, in getting the dairymen to clear up their herds from contagious abortion, he has been telling me of the difficulty he runs into with the dairymen. He says they feel about this way; they are willing to go ahead and have their herds inspected and go ahead and clean up the herds, but as matters now stand they do not know how much infection they have in the herd and they are wondering whether, if they find they have twenty-five or fifty per cent infection in the herd, that will bring about some drastic ruling on the part of the local health department and cripple the dairy industry before they can make any improvement.

The Department of Agriculture is doing some very valuable work in this problem, and if it is agreeable I should like to have Dr. Moore, the state veterinarian, given the privileges of the floor to discuss this question from the veterinary side.

(Dr. Moore was given the privileges of the floor.)

Dr. William Moore (State Veterinarian, Raleigh): As a veterinarian, not a sanitarian, I deeply appreciate being given the privilege of the floor. I being a veterinarian and you sanitarians, some might say our work is widely separated, but we know that is not so. It is the work of the veterinarian that has made the reduction of bovine tuberculosis possible, for instance.

Of course, I have a selfish motive in appearing before you this afternoon, because I wish to solicit your coöperation in this thing which is facing the dairy industry today—certainly the greatest problem the dairy industry in our state is facing. As a matter of fact, contagious abortion of cattle is one of our oldest diseases. It appeared in Europe long before the germ theory was advanced. It is an old disease with probably a new significance. In this country we have 1,500,000 fewer cows than ten years ago and probably 18,000,000 more people. The dairying business has changed in the last decade. This disease was not reported until about 1885. It has not been a serious problem except during the present century. It is a disease that affects most domestic animals; the one, of course, with which we are chiefly concerned is the cow. It is caused by the rod-shaped bacterium discovered by Bang of Denmark in 1835. A great deal of work has been done on it in recent years. This organism is a very versatile organism. It is responsible for practically all abortion in cattle and is responsible for a great proportion of weak calves that never amount to much, many dying soon after birth. It is responsible for ulcers on the udders; it produces temporary and permanent sterility; it produces retained placenta. It is found to affect horses and mules and recently has been found to affect chickens and also guinea-pigs. I mention this just to show that it is a widespread organism and produces many disease conditions. It is generally distributed over this country and occurs in all sections of the world where cattle and livestock are kept to any extent. It is naturally more prevalent in the older dairying regions of this country and was brought to this state from there. The dairying industry in this state is only about fifteen years old, because before then about seventy-five per cent of the state was infested with the cattle tick, and it was neces-

sary to get rid of that before we could have a dairying industry. It is pretty generally spread through the state, but we think the percentage of infection is small and for that reason it will not be as hard to control or eradicate in this state as in others. For the last two and a half years we have had a health certificate, and an animal must have a health certificate before being brought in. That has done good in two ways; it has prevented a large number of infected cows from being brought in and also has made men who go out to buy cows give the matter thought. A great many men, before this law, did not realize that there was a test by which this disease could be detected. It has been known for some time that you could not infect an animal through the blood stream, but only recently has it been found that you could infect an animal by dropping the germ in the eye. But the infection is chiefly carried in through the digestive tract.

It was formerly believed that an animal that gave birth to a normal calf could not have abortion. We know that is not true and that many cows can give birth to normal calves and yet be dangerous spreaders. We know now that that animal is often more dangerous. We also know that the most susceptible animal is the heifer that has reached sexual maturity and the pregnant cow. As Mr. Miller has stated, the Department of Agriculture, with which I am connected, views this entirely as an economic problem. The disease has cost our dairymen a large amount of money in the last few years. For three years we have been studying this problem, and our studies have shown that the most profitable herd which a man can have is a herd in which there are no infected animals, as determined after a number of tests. We find that the next most profitable herd is a herd in which all the animals are infected, because in the course of four or five years that would bring up the immunity. The least profitable herd a man can have is a herd in which some animals are infected and some are not. That has been the finding in other states, that the mixed herd in which you constantly have infection is the least profitable herd.

The test, of course, has its limitations. It does not tell you whether an animal is a spreader or not or whether it is going to abort, but we have found it very accurate when properly applied. Our plan of controlling this disease and ultimately eradicating it is the application of the agglutination test to all of the animals in the herd. Following this is the isolation of all positive animlas and thorough cleansing of the premises. Blood test all animals before adding to the herd. We recommend the re-testing of all animals every three months and then re-testing every year thereafter. We do not, as a general rule, recommend slaughter, because we know there is a shortage of dairy cattle and we do not know whether we could replace them. So we recommend isolation if the animal is valuable; if not valuable, we recommend slaughter. We know the average life of a dairy cow is about five years. We know that calves from infected dams or calves fed on infected milk can be kept free of infection if kept away from infected animals after they are six months old. We know that if we remove the animal from infection and put it on clean premises after it is six months of age you can raise

an animal which is free from infection. The reason for that, of course, is that it is a disease of sexually mature animals.

As to additions to the herd, of course it is dangerous, but you can do it on two tests. The State Department is now making these tests free. We are very grateful to the health officers for their coöperation with us. We feel that we are making progress in the control and eradication of this disease. At the present time we have 21 state farms in this state on which there are dairy herds. We have been working on those herds for the last two or three years and we have more than half of those herds now that are absolutely free from this disease and we expect to have a great many more within the next year.

There seem to be two things that are holding back this work. That is especially true among commercial dairymen. The first is that the dairyman is inclined not to want to test his herd because he is somewhat afraid of the other dairy, afraid he might have a high percentage of infection and that the other dairyman might use it against him. We had the same thing to contend with in the early days of tuberculosis eradication; if we tested a man's herd and found it free he wanted to advertise to the world that it was free, the inference being that the other man's was not. We think that is rather dangerous advertising, and we feel that there are enough virtues connected with milk for the dairyman to advertise those.

The other thing that has been holding back this work is the attitude of the dairyman toward his health department. He is going on all right now; he knows he has some abortion, but he feels if he has the herd tested and it shows a high percentage of infection the health department might take some drastic action that would hurt his business. And that is the reason I was glad to talk to you this afternoon. Those men look to you for information and advice. We shall be glad to have someone from our department meet with you and discuss this matter. As I say, I am here to solicit your support in this thing. We believe this disease is of enough economic importance to justify its eradication. As you gentlemen know, you have to have a rather prosperous business before you can do much with sanitation. Abortion is a losing proposition and will justify all the trouble and expense necessary to eradicate it. It is not easy to do, but we know we can eliminate it in any certain herd in a few years without taking any drastic action.

DISCUSSION

Dr. L. A. Crowell (Lincolnton): I happen to know that Dr. Shore has been doing quite a little work on undulant fever and I think it would be very fitting to have Dr. Shore tell us something about the prevalence of undulant fever so far as his work shows.

Dr. C. A. Shore (State Laboratory of Hygiene, Raleigh): So far as our work in the laboratory shows, undulant fever is not a very prevalent disease in North Carolina. We began making tests on all specimens of blood sent in for the Widal test about a year ago, I think it was, as well as those specimens sent in for this test. We have had about twelve or fourteen positive tests, but on sifting those out we found they represented only six positive cases in the state. We have had six cases in the last twelve months.

Dr. J. A. Morris (Oxford): I should like to ask Dr. Shore if there are the same limitations of obtaining the truth in undulant fever as there are in the Widal test, as to the time the specimens are taken.

Dr. Shore: There is, I think, about the same limitation. I may say we are not justified in basing a positive diagnosis on the microscopic tests. We get a great many suggestive microscopic agglutination tests. When we get any suspicious result at all we request a specimen of whole blood and make a series of agglutinations. Certainly the agglutinins do not develop very early in the disease; certainly not in the first week and probably not in the first two weeks. The time probably varies, as in typhoid fever.

The program being completed, the afternoon session adjourned.

MONDAY EVENING SESSION

April 28, 1930

The meeting convened at eight-fifteen o'clock, Dr. J. R. Hege, of Winston-Salem, presiding.

President Hege: We will continue with our program. We will rearrange the speakers somewhat. Dr. Laughinghouse will give us his address now. (Applause)

REMARKS TO HEALTH OFFICERS—TWENTY-FIRST ANNUAL SESSION NORTH CAROLINA PUBLIC HEALTH ASSOCIATION—PINEHURST, APRIL 28, 1930

Dr. Chas. O'H. Laughinghouse
State Health Officer, Raleigh

Some day somebody will write a history to show how the past human progress and human destiny have been shaped by the ravages of disease. The last part of such a history will show the beneficent influence of disease prevention and how entirely and completely the future will depend upon it.

What a panorama of events lie ready for the pen of him who would assume this task. Power at its peak tumbled down with a microbe's stroke; and on the other hand vast expanses of the earth suddenly relieved from threatened thralldom. Flashes of migraine engraving messages divine on souls made sensitive by denial of the flesh, as did the famous visions of St. Hildegard, because of intense headache, convince him that he was more or less inspired. How new religions, conceived by minds unbalanced by disease, started on their way to win the world. Mahomet's epilepsy, his periods of depression, his seasons of grievous mental distraction, help one to an understanding of his astounding career, fundamental to which was his own overpowering belief in his divine inspiration.

Territories cleared of savage foes by pestilence and thus made ready for the tender seeds of undreamed of civilizations. The balance of class and mass overturned by death dealing plague. Tropic jungles freed from parasitic barriers and made habitable for those teeming mil-

lions that even now perturb the Cassandras of nations proclaimed effete and spent.

How, for instance, disease stayed the hand of Alexander, at thirty-two, with Asia and the world about to fall within his grasp. How it struck down Henry V when only thirty-three, and with the inheritance of France settled at last; and then, how, within seven years, the mind of a shepherdess, turning inward and feeding upon itself, heard voices —and the Maid reversed the course of a century. How weak lungs made Cecil Rhodes, the child of an English parsonage, go to the other end of the earth there to spend himself for the greater, if doubtful, glory of the empire.

How the Children of Israel escaped from the House of Bondage, disease having leveled their barriers and releases. How Athens, in full flower, and facing its age-old rival, had disease bring down upon her more terrible damage than the severest defeat in battle could have done. How the reign of Marcus Aurelius, which occurred at a time when civilization had never climbed so high, suffered the havoc of pestilential disease which shook the empire critically and hurled blows from the effects of which it never recovered.

He will write of the times of Justinian, when plagues swept the world and raged with only gradual abatement for fifty-two years; making Justinian's reign to be disgraced by a visible decrease of the human species, which has never been repaired in some of the fairest countries of the globe.

He will write of the times when bubonic plague caused the death of ten thousand persons each day at Constantinople over a period of months; when cities were left vacant and in several districts of Italy, the harvest withered on the ground.

He will chronicle the fact that malaria blotted out the high civilization of ancient Greece and of Southern Italy. He will dwell on the Black Death of the fourteenth century. He will take the props from feudalism. He will show the most radical and universal social changes that Europe had ever known. He will prove that disease so upset the relations between lords and serfs as to breathe a spirit fatal to the whole system of the Middle Ages, arousing the defiance of socialism He will observe the hand of disease, molding the destiny of our own United States. He will tell of America's first Fathers, who clung to Plymouth, and saw the hand of God in the pestilence that had laid low the savages on the coast of Massachusetts Bay and rendered their own possession safe.

It was Nathaniel Morton's pious pen that told how the Lord disposed of the aborigines through the devastation of disease, when these people, the Pilgrims, arrived. Thus, in the opinions of our forefathers, God made way for his people by removing the heathen through the force of disease and planted His own people in their land.

This historian, whom we have in mind, may give us an idea of what might have happened to the world had Napoleon been spared cancer of the stomach. He may attempt to tell what would have happened to this great southland of ours, had Abraham Lincoln been spared the

onslaught of an assassin, made an assassin by insanity. We could go on and on, but time forbids.

These thoughts are brought to you in order to create an atmosphere of reasoning and thinking, sufficient to force the realization that your job and mine is a laudable thing; a noble thing, and from the standpoint of the public good, the most profitable thing in all the world. Disease prevention, with all its by-products, places the health worker of today on the very pinnacle of public service.

If we can get and keep in our minds and hearts the fact that we are disciples of the noblest of all noble callings, the time needful to the creation of such an attitude is time well spent. North Carolina's Board of Health is the clearing house for safety progress, happiness and better things; the attitude of the hundred counties makes or mars the perfection of its efforts. Being part and parcel of each other, and dependent the one upon the other, the day has come when we need to take cognizance of this fact; because our own accomplishments and our own mistakes are bringing us and our works too prominently into view for us to fail to appreciate and avail ourselves of every opportunity for improvement.

We have heretofore measured our monthly and yearly activities through and by a financial equivalent yardstick. As good as that system has been in days gone by, it is being replaced by a system which is broader, finer and more nearly fact-finding. It puts us in position to diagnose more accurately our needs and our armamentarium. Let me urge you to study the appraisal form. It will not only stimulate your imagination and your interest in your own particular line of work and your own particular department, but it will enable you definitely to map out an intelligent program and method of checking for each and every individual which makes up your personnel. It will show you definitely what you have and what you need. If you study it carefully, it is a manual through which you can make an accurate diagnosis of your own department. It will show you where your department is failing to function in any of its branches. It will show you what is most needful and most urgently necessary to accomplish. It will suggest lines of work and put you in position to know what should be given special attention in your own particular department. It will help you to build a balanced program with the personnel and budget which you have. It will assist you in protecting your department against one line of work at the expense of another. It will enable you to determine who is doing the health work in your community—whether it is the health department or some unofficial agencies, and in the event unofficial agencies are active in your bailiwick, it will put you in position to absorb and correlate and direct and make use of outside agencies, to the benefit of your own department and your own endeavor. It will provide the means of furnishing you with an array of data and the compilation of facts, which will put you in position to answer definitely questions on all local health activities and it will develop your chance to give satisfactory publicity to the work of your own department. It will provide a record whereby the progress of your county in health matters can be measured from year to year.

It will put you in position to determine the cost of the different activities of your department and to make a cost analysis of your work. It will enable you to more readily and more intelligently furnish reasons for increased appropriations for the furtherance of public health. In other words, it turns on the light and places you where you will see yourself as others see you.

Lastly, it is the national measuring rod and the standard by which not only the strength of departments, but the strength of men who direct departments are measured. If it be true in Holy Writ that "By their works, ye shall know them," it is equally true in county health departments that by the proper appreciation of the Appraisal Form men and their departments will show themselves as they are.

The State Board of Health is grateful to every health officer, every sanitary inspector and every nurse in every county health department of this state. It does not purpose to criticize or compare the one against the other—it will compare with standards set and agreed upon by the American Public Health Association. It wants to assist every health department to come as nearly up to these standards as the resourcefulness and the executive ability of county health officers will permit. It is offering you service, not criticisms; but the State of North Carolina is placing a large amount of money in our budget and it has left it to us as trustee. Our obligation is sacred. But no more sacred than yours. It is to be hoped that we will so develop our respective departments that we can always look each other in the face with the knowledge that we are fighting a good fight, and that we are keeping the faith. There are two seas in Palestine.

One is fresh, and fish are in it. Splashes of green adorn its banks. Trees spread their branches over it, and stretch out their thirsty roots to sip of its healing waters. Along its shores the children play, as children played when He was there. He loved it. He could look across its silver surface when He spoke His parables. And on a rolling plain not far away He fed five thousand people with its fishes.

The River Jordan makes this sea with sparkling water from the hills. So it laughs in the sunshine. And men build their houses near to it, and birds their nests; and every kind of life is happier because it is there.

The River Jordan flows on south into another sea.

Here is no splash of fish, no fluttering leaf, no song of birds, no children's laughter. Travelers choose another route, unless on urgent business. The air hangs heavy above its waters, and neither man nor beast nor fowl will drink.

What makes this mighty difference in these neighbor seas?

Not the River Jordan. It empties the same good water into both. Not the soil in which they lie; not the country round about.

This is the difference. The Sea of Galilee receives but does not keep the Jordan. For every drop that flows into it another drop flows out. The giving and receiving go on in equal measure.

The other sea is shrewder, hoarding its income jealously.

It will not be tempted into any generous impulse. Every drop it gets it keeps.

The Sea of Galilee gives and lives. This other sea gives nothing. It is named The Dead.

There are two kinds of county health departments in North Carolina.

There are two seas in Palestine.

PRESIDENT HEGE: I wish to thank you for that splendid address.

Next we will have a report of the Committee on Visitors and New Members.

DR. J. A. MORRIS (Oxford): Mr. President, there seemed to be no definite idea of the function of this committee. Dr. Epperson is the chairman of the committee. We had a meeting and it was decided that the committee express its desire that everybody who was interested in public health be invited to join the Public Health Association of North Carolina.

DR. R. S. MCGEACHY (Kinston): A few years ago we had the quarterly summary report sent out indiscriminately through the state. The health officers, very wisely, I think, requested that that be discontinued. It wasn't in my opinion a very fair test or anything like that. But now under the present system I want to introduce a resolution or request that the State Board of Health furnish each health department, and if it is necessary, to add the words "Health Department Only," the summary of the work being done in the various health departments in the state.

Even if I am in the lone minority, as far as I am concerned, I should like to have a report of that kind, either quarterly or monthly or in any way they can get it out. I should like to know what we are doing. and that will come in, in my opinion along the line of the resolution that was introduced so that we can to some extent get together on some definite public health program. Certainly things that apply somewhat in my territory would not apply in the mountains, but there are some objectives to which I think each department in the state could lend its energies, to make it state-wide and more effective than if one man pushes one thing, and another man somewhere else pushes something else.

I have not mentioned this to anybody. I do not know the sentiment of the meeting along that line. I would like to know under the appraisal form of evaluation what we are doing.

I introduce that request or resolution, asking the State Health Department to furnish each county department and city department or unit—each department that wishes a report or will make a request for such a report.

The motion was seconded.

DR. R. G. WILSON (Asheville, N. C.): Is that motion an amendment to the motion before offered?

PRESIDENT HEGE: I suppose we have to consider it as that.

Dr. R. G. Wilson: Under the appraisal form there is no comparison. That is, if Lenoir County and Forsyth County, using those as examples, the appraisal form does not compare. The only section to show is the health service need of the individual county and the health service afforded in the county. In other words, in Lenoir County the need might be the same as in Forsyth County, but on account of appropriations and personnel the service rendered in one might be quite different from the other so that under this form there is no comparison. You cannot compare one with another under this system. Under the circumstances, I am rather of the opinion that the information which Dr. McGeachy seeks to get by his motion would really not be of value.

Dr. Laughinghouse: The appraisal form, as I understand it, can be very quickly explained in so far as it relates to Dr. McGeachy's resolution, by the following example:

A man can go out and play golf alone against par. It is quite another thing from his playing golf against someone else. We don't want to start any spirit of competition or any spirit of comparison in the state because the appraisal form gives you definite things to aspire to. Here is a health department in one county that has a very, very complete personnel and a generous budget. When compared with the health department in another county that has a sparse personnel and sparse budget, naturally to the man who is not acquainted with appraisal forms, the sparsely budgeted county and sparsely personneled county shows up to a very decided disadvantage. But if you take the standards, if you play that county health department against par, it may be shown that that health department with its sparse personnel and with its sparse budget has really done a better piece of work than has the other county more generously supplied with both budget and personnel.

For that reason I have the opinion and the pronounced feeling that Dr. McGeachy's resolution, in the event it is passed, would not be conducive to what we would like to have.

Dr. J. A. Morris (Oxford): Mr. President, I would like to know exactly what par is. Isn't that 1,000 units?

Dr. Laughinghouse: That is what it is.

Dr. Morris: If 1,000 units be par, I should like to ask this question: Forsyth County has approximately 120,000 people. It has an area of about 400 square miles. Granville County has 28,000 inhabitants to be distributed over 510 square miles. In affecting units of work, of course, we have further to go, but we can use the Ford car and turn the countryside into the densest city, and so we have the work scattered over a district very much larger and cannot make a showing in Granville County of actual work done because of that. I don't see how we can play very well against par. (Applause)

Dr. Laughinghouse: For this reason, Mr. Chairman, that the square miles and the budget are laid out in Forsyth County's program and the square miles and the budget are laid out in Granville County's program and when you play against par you consider the fact that you have 500 miles as against 400 and you consider the fact that you have a sparse budget as against a generous budget.

Dr. McGeachy: It begins to look as though I am in the minority, but as far as I am concerned, I really would like to have some informa-

tion of that kind. I will now withdraw my resolution or motion, but I am not sorry that I made it. (Laughter) I wanted all to begin to think along the line that the resolution suggests, that we concentrate to a certain extent and pool our resources, not our money nor personnel, but get behind some of it and push it and get it out of the way and then take up something else.

PRESIDENT HEGE: Do I understand that you withdraw your motion?

DR. MCGEACHY: Yes, with the permission of the second.

PRESIDENT HEGE: The next is the report of the Committee on the President's Address, by Dr. Ford.

DR. D. E. FORD (New Bern): Mr. President, your Committee on the President's Address begs to submit the following report:

We find it a comprehensive and timely as well as scholarly document. We wish to particularly commend its presentation of the work of the practicing physician in public health, showing that the health officer is, after all, a publicly paid medical specialist, his interest devoted exclusively to the work that has always been and will continue to be done unreported and unpaid by the physician in private practice.

We wish to emphasize his idea that this specialty is still immature, that to develop into full productive maturity in the field, the health officer must have his dreams, have faith in his plans and day by day plug along, giving service, buoyed up by the love of the work, and knowing that eventually there will come professional, political and financial recognition of his work.

We want to commend Dr. Hege on this address as a proof of his standing in his specialty—Public Health.

(Signed) DR. D. E. FORD,
DR. R. S. MCGEACHY,
DR. L. L. WILLIAMS.

(Applause)

Upon motion regularly made and seconded, it was voted that the report be adopted.

PRESIDENT HEGE: Dr. Symington, we would like to know who is to appoint the committee you spoke of in the resolution, I mean to confer with the State Board relative to these forms. The resolution was that a committee be appointed. Who appoints the committee?

DR. JOHN SYMINGTON (Moore County Health Officer, Carthage): I would say the meeting here.

DR. R. G. WILSON (Asheville): If there is any uncertainty, may I make the motion that the newly appointed president of the Public Health Association make that appointment?

The motion was seconded and carried.

DR. LAUGHINGHOUSE: If you will permit me, I have a rather interesting announcement to make to the Public Health Association. It is that Dr. Davison of Duke University in coöperation with the committee from the Medical Society of the State of North Carolina, has arranged a plan by which he can put a memorial in Duke's Hospital Medical School to the physicians of North Carolina who died in the World War.

In addition to that, it gives me very, very keen pleasure to tell you that Davison along with that committee, has also arranged a scheme by which he can place in Duke University Hospital and Medical School a similar memorial to the nurses, God bless them! (Applause)

DR. MCGEACHY: Is there anything before the house now?

PRESIDENT HEGE: No.

DR. MCGEACHY: I want to ask Dr. Shore one more time if he can tell us whether there is any lifetime dose of toxin antitoxin? That is thrown up to me from morning until night. I don't know. I don't believe he does, and I know he is going to be honest enough to say he does not because nobody has lived a lifetime since it was put on the market. I don't see how on earth we can tell whether it is a lifetime dose or not. That question is asked of every physician and health officer in North Carolina. I want authority from somebody in whom I have confidence to back me up, support me on that. I should like to hear from Dr. Shore.

DR. C. A. SHORE (Raleigh): I think he has answered his own question. I don't think there is anything more to say. Nobody has a right to say that anybody can be immunized for life. Certainly, I don't think a health officer would care to say that. In fact, I think we ought to be very careful about promising immunity at any time against anything. It is all relative. We think we can give practical immunity against diphtheria and practical immunity against typhoid fever, but that is the best we can do. That is all we have a right to claim. I think it is worth doing. What we do in those two diseases, certainly beyond a question is worth doing, in my opinion. We ought not to claim too much.

DR. MORRIS: If Dr. Shore will be patient, I would like him to express his idea of the comparative value of the immunity acquired by having a disease, and that given by immunization. For instance, measles is said to give immunity to any subsequent attack. Can we immunize a patient of diphtheria in that sense?

DR. SHORE: I think I can answer that in this way: Complete immunity to measles by one attack is possible. I believe a second attack may occur. I think it is very rare. I think it is almost complete. I think three doses of toxin antitoxin or three doses of toxoid if followed by the Schick test gives a good relative immunity against diphtheria. Whether that ever diminishes or not is very difficult to prove. On the contrary, we have reason to believe it increases. It may diminish and may be lost in certain cases. I don't know whether I am answering your question or not.

DR. MORRIS: I think so. I appreciate your point.

DR. HARRIS: I think we are waiting for the other speaker and there is nothing before the house. We have been talking about what we claim in connection with the association. I want to tell you about something that happened a few years ago. One of our midwives got into trouble with a woman and asked me to come over to help her. She couldn't do a thing with the case. I went.

She said, "Doctor, I can't make a birth certificate. I wish you would make it out for me." I did. I signed my name to it, and gave it to

her. Pretty soon she sent it to me with this note in the corner—"Dr. Harris, I done it." She was afraid I would get credit for that. (Laughter)

Dr. C. W. Armstrong (Salisbury): Dr. McBrayer was to have made an announcement, but he has failed to do so, I understand. I am going to usurp that privilege, to say that at a recent meeting of the board of directors of the State Tuberculosis Association held in Greensboro, it was decided to have a state-wide meeting of those interested in the problem of tuberculosis control in Salisbury sometime during the coming summer. It was decided at the meeting held today to hold the meeting during the first week in August.

My purpose in calling your attention to this is to invite each and every one to attend. We want at that meeting, if possible, every health officer and nurse in North Carolina. We are going to try to have a big tuberculosis rally in Rowan County. We will have there some people of national repute and a program that should be interesting to everyone who is interested in public health work. Few people are not interested in tuberculosis work. It is high time you became interested in it. I think if you can come up this summer that you will find something there that will be intensely interesting in the way of program, and I think we can also furnish you some entertainment that will make it worth while.

This is the first time, Salisbury being sort of a hick town, that we have ever had anything. We are like a kid with a birthday party, very much excited. We will be very much disappointed if you all don't come. We are going to send out cards sometime before the meeting to all you health officers and nurses, asking you whether or not you intend to attend.

Salisbury is especially noted for two things—barbecue and the things that go with barbecue to make it more interesting. (Laughter) We want to know how many of you are coming and are going to provide plenty of both for you. We want everyone of you to come. We want you to come for two reasons—in the first place, because we take a great deal of pleasure in seeing you there and associating with you; and in the second place, we have a selfish interest. We want to see you because we believe you can help us by your presence. You will be notified of the exact date and I hope everyone will come. (Applause)

President Hege: I am sure they will have even ice cream, perhaps, or something mild like that for some of us who do not eat barbecue.

We were to have an address by Dr. L. A. Crowell, president of the State Medical Society, but it seems he has gotten away from us.

We will go on to the election of officers.

Dr. D. E. Ford was nominated for the office of president.

The motion was seconded.

Upon motion regularly made and seconded, it was voted that nominations be closed and the secretary instructed to cast one vote for Dr. Ford.

Dr. F. M. Register (Raleigh): It gives me great pleasure to cast the ballot for Dr. Ford as president for next year. I now declare Dr. D. E. Ford elected president for the ensuing year.

President Hege: The Chair will now entertain nominations for vice-president.

Dr. McGeachy: I want to nominate somebody. I only know his initials. Somebody tried to tell me his name. I want to nominate Dr. C. N. Sisk as our vice-president for the coming year.

Dr. R. S. Carlton (Winston-Salem): I want the pleasure of nominating a man who is here and whose initials I do know. One of the outstanding health officers of this group, Dr. J. H. Epperson of Durham.

Dr. L. L. Williams: It gives me a great deal of pleasure to be able to rise to my feet (laughter) and second the motion for the nomination of a man, as vice-president, whom we all know and who has been in our midst a number of years and is in our midst tonight—Dr. J. H. Epperson of Durham, one of our outstanding men as a health officer, who in a recent check of the Chamber of Commerce of the United States was given fourth place in the final check-up of health departments in his city's class. It gives me a great deal of pleasure to second Dr. Carlton's motion for Dr. Epperson as our next vice-president.

Dr. L. J. Smith: I will second the motion to nominate Dr. Sisk. I regret he is not present. I hesitate to get on my feet on that account. I don't know whether he desires it. Personally I would like to see Dr. Sisk made vice-president of this association, and therefore I will second the motion.

Distribution of ballots.

President Hege: Dr. J. H. Epperson, 26 votes; Dr. C. N. Sisk, 16 votes. Dr. Epperson is elected vice-president. (Applause)

Dr. Cy Thompson is with us and we would like to hear from him before we take the vote on reëlecting our secretary.

Dr. Cyrus Thompson (Jacksonville): Go ahead with that.

President Hege: The Chair will entertain a motion to reëlect our secretary.

Dr. Laughinghouse: I move the secretary be reëlected by acclamation right now.

Voice: Don't forget to call him treasurer, too.

The motion was seconded and carried.

Dr. Cyrus Thompson: I used to tell a story which illustrated the fact that I am so frequently called upon to say something. I reckon perhaps it may be hereditary. It is said that once years ago when there was no travel by bus and not very much travel by trains, and schedules were inadequate and uncertain, that a drummer was left off in a town all day long. He met up with an old Negro and said, "Uncle, I want to go on from here, but I can't get a train until night. I am spending the day necessarily here. Do you live here?"

The Negro said, "Yes, sir, I live here."

"How long have you lived here?"

"I have lived in this town pretty much all my life."

"Do you know anything about the town?"

"Yes, I know the whole town pretty thoroughly."

"Well, what churches have you got here?"

"Boss, we have pretty much all of them."

"I am always interested in the churches in a town in which I go. Where will I find them?"

"Oh, well," the darkey said, "If you will go right down here in front of the Grand Opera House you will find the Episcopal Church. If you go right back of the City Hall, you will find the Catholic Cathedral. If you go right across from the First National Bank, you will find the Jewish Synagogue." (Laughter)

The drummer said, "Have you got a Baptist Church?"

"Oh, yes, a fine Baptist Church."

"Well, where will I find that?"

"Boss, you go right down to the river's edge, right through and you will find the Baptist Church." (Laughter)

"Where will I find the Presbyterian Church?"

"You go right out this street until you go right past the ice plant, and beyond the ice plant you will find the Presbyterian Church." (Laughter)

The drummer said, "I am kind of a Methodist. Where will I find the Methodist Church?"

The Negro said, "Take this street, go out this way until you pass just by the gas house and right there is the Methodist Church." (Laughter)

So, being hereditarily and by practice a Methodist, I suppose these invitations to consume a little caloric atmosphere so frequently come to me by reason of that.

You see, that fitted in very well. The Jews by the National Bank; the Episcopalians in front of the Grand Opera House; and the Catholic Cathedral—law and order, right by the City Hall.

I just put that by way of introduction. Sometimes the preface to a book is longer than the book itself.I have been in the House of Delegates and trying to keep them straight. I came over here just for the purpose of telling you much much I enjoyed your session this morning, how much more the Public Health Association is in North Carolina than I dreamed of before. I feel that it is very good for me to have been here with you. I congratulate you, ladies and gentlemen. I congratulate the State of North Carolina upon the efficiency of your organization and the zeal with which you are going forward to do so great a work in North Carolina.

If that makes you feel good—it is said out of my heart. There is no sort of prevarication in it. As the nigger says, it is simply the God's truth which I have told you. I thank you very much for this opportunity. (Applause)

Dr. McGeachy: We have a serious disease. The children are having an eruption. What in thunder it is, I don't know. I know it is not measles. It is not chicken pox. It is like nothing I have seen. I have heard of one other county that has had something very similar to it. Some of them have fever and some don't. They are all broken out from head to foot. It stays about 24 hours and then it is gone. Some are in high society and some in low. If anybody else has anything like it, I'd like them to show me. Physicians have asked me to go to see it with their

and none of us so far has been able to run it down. I will admit I have never seen anything like it. Some of them have a little sore throat, and some have no sore throat at all. It is not measles. There is no eruption in the mouth. There is no evidence in the mouth at all. One old grandmammy said it was roseola.

Dr. F. R. Harris (Henderson): I think the trouble was up in the head.

Dr. A. C. Bulla (Raleigh): After what Dr. McGeachy said, I have the nerve to rise to my feet. We have had the same thing in Raleigh. Some may have it now. I don't know. I don't know what it is. The pediatricians don't know what it is. They said they did not. They wanted me to see a case or two with them. I did so, but it is not roseola. I had never seen anything like it before. About a year ago I saw a case and about two weeks ago I saw a child with the same thing. I don't know what it is. It looks like scarlet fever, but it isn't. The child may have a little temperature, but very little. I have seen half a dozen cases in Raleigh in the last twelve months. It is nothing serious but something that puzzles people.

Dr. F. R. Harris: I think there is nothing new under the sun. I think these gentlemen are just mistaken.

President Hege: Do we hear of it anywhere else in the State other than in Raleigh and Kinston?

Dr. D. E. Ford (New Bern): New Bern has a few cases.

Dr. L. J. Smith (Wilson): I suspect this disease they are talking about is a typical form of scarlet fever. I made a very close personal study of scarlet fever. It so happened that I furnished my own clinic for about forty days and nights. I was quarantined. I have been interested in the disease and believe from what these men say that they have a very mild form of scarlet fever. We were told this winter that scarlet fever is becoming very much less intense that it used to be, and that we see cases very often that we are in doubt about, even without an eruption, with a mild sore throat, and it cannot be classed as anything other than scarlet fever. As proof of that fact, very often some more susceptible child contracts the disease from the child that has a very mild type of the disease.

I have seen some of the cases the gentlemen mentioned and I fully believe it is nothing more than a mild form of scarlet fever. We know that no disease varies in its intensity more than scarlet fever does. It can go all the way from an absolutely minor illness to a very intense, severe illness, and as far as the eruption appearing is concerned, and its characteristic appearance, it is not necessary to have it in order to know that we have scarlet fever.

Dr. A. C. Bulla: I don't make that mistake. I always prove my cases. This child has a positive Dick test after eruption. I gave it to two or three to prove whether it had scarlet fever and everyone gave a positive Dick test after the eruption.

Dr. McGeachy: Children two years old were having it that were known to have had scarlet fever. One of my children showed the highest temperature anyone has had that we know of—one hundred and four-fifths. A nurse carried one of the children home from school.

When they came to me to see it, it was gone. The eruption was gone. I told her when she came it was the first case we had. The child got well before he got to see me.

President Hege: I will ask Dr. Armstrong and Dr. Williams to conduct the new president to the Chair, and then we will continue the discussion on this unknown disease.

Dr. Ford was escorted to the Chair by Dr. Armstrong and Dr. Williams.

Calls for a speech from the newly elected president.

President-elect Ford: No speech.

All the official business of the meeting has been finished, but if any more of you gentlemen have anything on your chest that you wish to get off, now is the opportunity.

The meeting adjourned at 9:30 o'clock.

ALPHABETHICAL LIST OF MEMBERS

WITH POSTOFFICE ADDRESSES

Name	*Address*
*Abel, J. F., (Hon.)	Waynesville
Abernathy, H. N	Charlotte
*Abernathy, Miles B	Reidsville
*Abernethy, Claude O	Raleigh
*Abernethy, E. A	Chapel Hill
Achard, Lucien	Morganton
Adams, C. A	Durham
Adams, Charles E	Gastonia
Adams, Edw. E	Murphy
Adams, J. L	Asheville
*Adams, L. C	La Grange
*Adams, M. R. (Hon.)	Statesville
*Adams, N. B	Murphy
Ader, O. L	Walkertown
Adkins, M. T	Durham
Alexander, Geo	Asheville
*Alexander, James M	Statesville
*Alexander, Jas. R. (Hon.)	Charlotte
Alexander, M. Janet	Montgomery India (Mecklenburg Co.)
*Allan, William	Charlotte
Allen, Benjamin G	Henderson
*Allen, Chas. I	Wadesboro
*Allen, Jos. A	New London
Allen, Rufus L. (Hon.)	Waynesville
*Allen, W. O	Hendersonville
*Allgood, R. A	Fayetteville
Allhands, John M	Cliffside
Ambler, Arthur C	Asheville
Ambler, Chase P. (Hon.)	Asheville
*Anders, McT. G	Gastonia
*Anderson, Albert (Hon.)	Raleigh
*Anderson, Chas .A. (Hon.)	Burlington
Anderson, James A	Gastonia
*Anderson, L. L	Madison
*Anderson, Thomas Eli (Hon.)	Statesville
*Anderson, W. B	Durham
Anderson, Wade H	Wilson
Andrews, E. D	
Andrews, Robert M	Bostic
Angel, Frank	Franklin
Anthony, J. E	Kings Mountain
Archer, Isaac J	Black Mountain
*Armstrong, C. W	Salisbury
Asbill, David S	Statesville
*Ashby, E. C	Mount Airy
*Ashby, J. W	Raleigh
*Ashe, J. R	Charlotte
Ashecraft, J. E	Monroe
Ashworth, B. L. (Hon.)	Marion
*Ashworth, W. C. (Hon.)	Greensboro
Austin, D. R	Charlotte
Austin, Frederick De Costa,	Charlotte
*Austin, J. W., O.A.L.R.	High Point
*Averitt, K. G	Cedar Creek
Avery, E. S	Morganton
Aycock, F. M	Princeton
*Aydlett, H. T	Greensboro
Aydlette, Jos. P	Earl
Baggett, Leaman	Whiteville
Baier, Geo. F., Jr	W. Asheville
*Bailey, C. W	Greensboro
Baird, C. A	Mount Airy
Baker, Horace M	Lumberton
*Baker, J. M. (Hon.)	Tarboro
Baker, W. E	Arden
Ball, M. W	Durham (Craven Co.)
*Bandy, W. G	Lincolnton
*Banner, A. C., O.A.L.R.	Greensboro
*Banner, Chas. W., O.A.L.R.	Greensboro
Barbee, G. S	Zebulon
Barber, Y. M	Macclesfield
Barefoot, Graham B	Chadbourn
Barker, C. S	New Bern
Barrett, H. P	Charlotte
*Barrett, J. M	Greenville
*Barron, A. A	Charlotte
*Basnight, Thos. G	Stokes
*Bass, H. H	Durham

*Present at 1930 meeting at Pinehurst.

Name	*Address*
Bass, Spencer P.	Tarboro
Battle, Geo. C.	Asheville
Battle, Ivan P.	Rocky Mount
Bass, H. H., Jr.	Henderson
*Battle, John T. J. (Hon.)	Greensboro
*Baxter, O. D.	Raleigh
*Baylis, E. Katherine	Greensboro
Baynes, R. H.	Durham
*Beall, L. G.	Black Mountain
*Beall, Wm. P. (Hon.)	Greensboro
Beam, H. M.	Roxboro
*Beam, R. S., O.A.L.R.	Lumberton
Beasley, E. B.	Fountain
*Beckwith, R. P.	Roanoke Rapids
Beers, David L.	Asheville
Belk, Geo. W.	Gastonia
*Bell, A. E.	Mooresville
*Bell, Carl W.	Raleigh
*Bell, F. O.	Burlington
Bell, J. C.	Maysville
Bell, G. E.	Wilson
Bellamy, Robert H.	Wilmington
*Belton, J. F.	Winston-Salem
Benbow, E. V.	Winston-Salem
Benbow, J. T.	Winston-Salem
Bender, E. L.	New Bern
*Bennett, E. C.	Elizabethtown
Bennett, Jos. H.	Wadesboro
Bernard, Holman	Pinnacle
*Berry, John	Greensboro
Best, Benj. W.	Greensboro
*Best, D. E.	Goldsboro
Best, Henry B.	Wilson
Biggs, Montgomery H.	Rutherfordton
*Bigler, V. L.	Albemarle
*Billings, G. M.	Morganton
Bingham, Plato	Marion
*Bitting, Numa Duncan	Durham
*Bittinger, S. M.	Sanatorium
*Bizzell, M. E.	Goldsboro
*Bizzell, Thos. M.	Goldsboro
*Black, George Wm.	Pineville
Black, O. R.	Landis
Blackburn, T. C.	Hickory
Blackshear, T. J.	Wilson
Blair, Andrew	Charlotte
*Blair, A. McNeill	Southern Pines
*Blair, J. L.	Gastonia
*Blair, M. P.	Marshville
Blalock, B. K.	North Charlotte
*Blanchard, T. W.	Hobbsville
*Blue, A. McN.	Carthage
*Blue, Waylon	Jonesboro
Blumberg, Alfred	Oteen
Boaz, Thos. A.	Stoneville
*Boddie, Needham P. (Hon.)	Durham
*Boice, E. S.	Rocky Mount
Boker, Col. David	Fort Bragg
Bolt, C. A.	Morrisville
Boney, Elwood R.	Kinston
Bonner, H. M.	Greenville
Bonner, J. B.	Washington
*Bonner, K. P. B.	Morehead City
*Bonner, O. B., O.A.L.R.	High Point
Booker, Edwin N.	Clayton
*Booker, L. S.	Durham
*Boone, W. H.	Durham
*Boone, W. W.	Durham
*Bost, T. C.	Charlotte
Bostic, Wm. C.	Forest City
*Bostic, W. C., Jr.	Forest City
*Bowers, M. A.	Winston-Salem
*Bowles, Francis N.	Durham
Bowling, Edwin Holt	Durham
*Bowman, E. L.	McDonalds
*Bowman, H. P.	Greensboro
Bown, Herbert H.	Asheville
Boyer, Maj. Gouveneur H.	Ft. Bragg
Boyles, A. C.	Lowgap
Boyles, M. F.	Valdese
*Brackett, W. E.	Hendersonville
Braddy, Wade H.	Burlington
Bradford, B. M.	Cherryville
Bradford, W. Z.	Brooklyn
*Bradshaw, T. G.	Wilson
*Bradsher, J. S.	Stovall
Brantley, Hassell	Spring Hope
Brantley, J. C.	Spring Hope
Brawley, M. H., O.A.L.R.	Salisbury
Bray, T. L.	Plymouth
*Brenizer, A. G., Jr.	Charlotte
*Brewer, J. S.	Roseboro
Brewton, W. A.	Canton
*Bridger, D. H.	Bladenboro
*Bridges, D. T.	Lattimore
Briggs, H. H., O.A.L.R.	Asheville
*Brinkley, H. M.	Durham
*Brinn, T. P.	Hertford
*Bristow, C. O.	Rockingham

Name	*Address*
Britt, C. S.	Charlotte
*Britt, J. N.	Lumberton
*Broadway, R. E.	Tarboro
*Brockmann, Harry L.	High Point
*Brooks, B. U.	Durham
*Brooks, G. M.	Rocky Mount
Brooks, H. E.	Clayton
*Brooks, R. E.	Burlington
Brookshire, H. G.	Asheville
*Broun, M. S., O.A.L.R.	Asheville
Brown, E. M.	Washington
Brown, C. E.	Salisbury
Brown, F. B.	Winston-Salem
Brown, G. A. (Hon.)	Mt. Ulla
Brown, G. W.	Raeford
*Brown, J. P.	Fairmont
Brown, J. S. (Hon.)	Hendersonville
Brown, Kermit	
Buckner, J. M.	Swannanoa
Brownsberger, John F.	Asheville
Brownson, Wm. C. (Hon.)	Asheville
*Bryan, Lorenzo D.	Snead's Ferry
Bryant, Chas. G.	Jonesville
Buchanan, L. T.	Laurinburg
Buchanan, C. L.	Union Mills
Buck, David M.	Asheville
Buffaloe, J. S.	Garner
*Bugg, C. R.	Raleigh
*Buie, Roderick M.	Greensboro
*Bulla, A. C.	Raleigh
Bulla, M. S.	Elizabeth City
*Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
*Bullock, Thomas C.	Autryville
*Bulluck, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burleson, W. B.	Plumtree
Burleyson, L. N.	Cabarrus
Burns, J. E.	Concord
Burress, D. A.	High Point
*Burrus, John T. (Hon.)	High Point
Burt, B. W.	Holly Springs
Burt, S. P.	Louisburg
Busby, Julian G.	Salisbury
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Marion
*Byerly, Andrew B.	Cooleemee
*Byerly, Wesley Grimes	Sanatorium
*Bynum, John (Hon.)	Winston-Salem
*Byrd, W. C.	Morrisville
Caddell, G. C.	Hoffman
*Caldwell, D. G.	Concord
*Campbell, Alton C.	Raleigh
Campbell, A. S.	Durham
Campbell, Jas. I.	Norwood
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Carter, Thos. L.	Gatesville
*Carlton, Romulus L.	Winston-Salem
*Carlyle, J. B.	Burlington
Carmichael, T. W.	Rowland
*Carpenter, Coy C.	Wake Forest
*Carr, Eugene M.	Asheville
*Carr, M. L.	LaGrange
Carr, Ransom Lee	Rose Hill
*Carrington, G. L.	Burlington
*Carroll, E. D. Dixon	Raleigh
Carroll, F. W.	Hookerton
Carroll, John William	Wallace
*Cater, C. D.	Greensboro
Carter, H. W., O.A.L.R.	Washington
*Carter, P. C.	Madison
Castelloe, Cola	Windsor
Casstevens, J. C.	Clemmons
*Casteen, Kenan	Leaksville
*Caviness, Zebulon M.	Raleigh
*Caviness, V. S.	Raleigh
Chadwick, W. S.	Beaufort
Chapin, Wm. Burdette	Pittsboro
Cheadle, C. M.	Micaville
*Cheatham, Goode	Henderson
*Cheatham, G. R.	Raleigh
Chester, P. J., O.A.L.R.	Fayetteville
*Cheek, C. E.	Fuquay Springs
Cheesborough, Thos. P. (Hon.)	Biltmore
*Chiles, George G.	Durham
*Choate, Glenn Wm.	Salisbury
*Choate, J. W. (Hon.)	Salisbury
*Clark, D. D.	Clarkton
Clark, E. S.	Clarkton
Clark, H. S.	Asheville
*Clement, Edward B., O.A.L.R.	Salisbury
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
Clyatt, Claude Eugene	Denton
*Cobb, Donnell B.	Goldsboro
*Cobb, Wm. H., Jr.	Goldsboro

Name	*Address*
*Cocke, C. H.	Asheville
Cocke, E. R.	Asheville
Cocke, Jere E.	Asheville
*Codington, H. A.	Wilmington
Coe, Samuel S.	High Point
Coffey, Lawrence H.	Lenoir
*Colby, C. DeW.	Asheville
*Cole, Walter F.	Greensboro
*Collins, Geo.	Raleigh
*Collings, Ruth M.	Greensboro
*Combs, Howard J.	Elizabeth City
*Combs, Jos. J.	Raleigh
*Cook, H. L.	Greensboro
Cook, J. L.	Winston-Salem
*Cooke, G. C.	Winston-Salem
*Cooper, G. M.	Raleigh
Coppedge, T. O.	Nashville
*Coppridge, W. M.	Durham
*Corbett, Clarence Lee	Dunn
*Corbett, L. W.	Goldsboro
Corbett, J. P.	Swansboro
*Cornwell, A. M.	Lincolnton
Corpening, O. J.	Granite Falls
*Costner, Thos. F.	Lumberton
Costner, W. V.	Lincolnton
Cotten, Clyde E.	Asheville
Couch, V. F.	Winston-Salem
Council, J. B. (Hon.)	Salisbury
Covington, Platt W., 1479 Harrison St., Salt Lake City, Utah (Anson Co.)	
Cox, Benj. F.	Palmerville
Cox, B. T.	Winterville
Cox, Thomas A.	Hertford
Cox, E. L. (Hon.)	Jacksonville
Cox, G. S.	Tabor
*Cozart, S. R.	Greensboro
*Cozart, W. S.	Fuquay Springs
Craddock, A. B.	Asheville
Craft, C. C.	Hickory
*Craig S. Douglas	Winston-Salem
Crane, C. W.	
*Cranmer, J. B.	Wilmington
*Craven, Thomas	Huntersville
*Craven, W. W.	Charlotte
Crawford, Robt. H.	Rutherfordton
Crawford, W. J.	Goldsboro
*Crisp, S. M.	Greenville
*Cromartie, R. S.	Elizabethtown
Croom, G. H.	Asheville
*Crouch, A. McR.	Wilmington
Crouch, T. D.	Stony Point
*Crow, S. L.	Asheville
*Crowell, A. J. (Hon.)	Charlotte
*Crowell, L. A. (Hon.)	Lincolnton
Crowell, W. H.	Whiteville
*Crumpler, Paul	Clinton
*Cummings, M. P.	Reidsville
*Currie, D. S.	Parkton
*Cutchin, J. Henry	Whitakers
*Dale, G. C.	Goldsboro
*Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.)	Winston-Salem
Dalton, Wm. N.	Winston-Salem
*Daniel, N. C.	Oxford
*Daniels, O. C., O.A.L.R.	Oriental
Daniels, R. L.	New Bern
Daughtridge, A. L.	Rocky Mount
Daugherty, J. E., 658 Park Place, Brooklyn, N. Y. (Forsyth Co.)	
*Davenport, C. A.	Hertford
*Davidian, Varton A.	Smithfield
*Davidson, Jno. E. S. (Hon.)	Charlotte
*Davis, F. M.	Canton
Davis, George	Beaufort
*Davis, H. V.	Wilmington
*Davis, Jas. W.	Statesville
Davis, J. Franklin	High Falls
Davis, J. M.	Wadesboro
*Davis, P. B., Sheraton Hotel,	High Point
*Davis, R. B.	Greensboro
Davis, Steven W.	Charlotte
Davis, Thomas W., O.A.L.R.	Winston-Salem
*Davison, Wilburt C.	Durham
*Dawson, W. E.	Hookerton
Deans, A. W.	Battleboro
*DeArmon, J. McC. (Hon.)	Charlotte
*DeLaney, C. O.	Winston-Salem
DeLoatch, M. W.	Tarboro
*Darden, O. B.	Richmond, Va. (Durham Co.)
*Dees, D. A., O.A.L.R.	Bayboro
*Dees, R. E.	Greensboro
*Dees, Rigdon O.	Greensboro
*Denson, H. A.	Bennett
Denton, A. L.	Castalia
*Dewar, William B.	Raleigh
*Dick, Julius .V.	Gibsonville

Name	*Address*
*Dickie, J. W.	Southern Pines
*Dickinson, E. T. (Hon.)	Wilson
*Dickson, M. S.	Longwood
Dillard, G. P.	Draper
Ditmore, Harry B.	Marion
Dixon, Guy E.	Hendersonville
*Dixon, G. G.	Ayden
*Dixon, Hubert C.	Madison
*Dixon, W. H.	Rocky Mount
*Dixon, Wm. H.	Kinston
Donnelly, J.	Huntersville
Drafts, Andrew B.	Hendersonville
Drewry, Wm. H.	Grimesland
Duffy, R. N.	New Bern
Duquid, Jos. W.	Dover
Duncan, Amos C.	Forest City
Duncan, Julian E.	N. Wilkesboro
*Duncan, S. A.	Benson
Dunlap, L. V.	Albemarle
Durham, C. W.	Pinehurst
Dyer, John W.	High Point
*Eagle, J. C.	Spencer
Eagles, Charles S.	Wilson
Easley, P. S.	Statesville
*Easom, H. F.	Sanatorium
Eckel, O. F.	Asheville
Eddleman, Hall M. (Hon.)	Gastonia
Edgerton, Jas. L. (Hon.)	Hendersonville
Edwards, A. D.	Winston-Salem
Edwards, B. O.	Asheville
Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
*Edwards, E. C.	Southern Pines
Edwards, F. D.	Lawndale, Rt. 1
Edwards, J. D.	Siler City
*Edwards, V. E.	Greensboro
Eldridge, Chas. P.	Raleigh
*Elias, Lewis W.	Asheville
Eller, Albert J.	Readybranch
*Ellington, A. J., O.A.L.R.	Burlington
Elliott, A. H.	Wilmington
Elliott, G. D.	Fair Bluff
*Elliott, J. A.	Charlotte
Elliott, J. C.	Oxford
*Elliott, W. F., O.A.L.R.	Lincolnton
Ellis, R. C. (Hon.)	Shelby
English, E. S.	Brevard
Erwin, Evan A.	Laurinburg
Eskew, D. C.	Winston-Salem
Evans, J. E.	Wilmington
*Evans, L. B.	Windsor
Evans, W. E.	Rowland
*Everett, A. C.	Rockingham
Ewing, J. B.	Spruce Pine
Fairchilds, J. M.	Celo
*Faison, Yates W.	Charlotte
*Farrington, R. K.	Thomasville
Farrior, J. W.	Warsaw
*Farthing, L. E.	Wilmington
*Fassett, Burton W., O.A.L.R.	Durham
Fauntleroy, Jas. W.	Zirconia
Fearing, Isaiah	Elizabeth City
*Felton, R. L.	Carthage
Felts, Robt. L.	Durham
Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
*Ferguson, R. T.	Charlotte
*Ferneyhough, W. T.	Greensboro
*Fetner, L. M.	Charlotte
*Fetzer, P. W.	Madison
Fields, Robert M.	Goldston
Finch, O. E.	Raleigh
Finney, J. R.	Boonville
Fitch, W. E.	Bedford Springs, Pa. (Granville Co.)
*Fitzgerald, J. H., O.A.L.R.	Smithfield
*Flagge, Philip W.	High Point
Fleetwood, Joe A.	Conway
Fleming, M. I.	Rocky Mount
Flemming, Giles M.	Cleveland
*Flippin, J. M.	Hickory
Flippin, Samuel T. (Hon.)	Siloam
Flowe, R. Frank	Kannapolis
Flowers, Clarence A.	Wendell
Flowers, C. E.	Zebulon
Floyd, A. J.	Chadbourn
Floyd, H. T.	Oteen
Floyd, L. D.	Cerro Gordo
Folger, P. B.	Dobson
Folsom, T. W.	Asheville
*Ford, D. E.	New Bern
*Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
*Foster, H. H.	Norlina
*Foster, J. F.	Sanford
Foster, M. T.	
Fouts, J. H.	Franklin
*Fox, N. A.	Guilford College
*Fox, Robert Eugene	Asheville
*Fox, P. S.	Raleigh

Name	*Address*
Francis, Wm. G.	Waynesville
Frazer, H. Thompson	Asheville
*Frazier, J. W.	Badin
*Freeman, J. D., O.A.L.R.	Wilmington
*Freeman, Roma	Bailey
*Freeman, R. H.	Raleigh
Freeman, Wm. T.	Biltmore
Fresh, W. M.	Hickory
*Frizzelle, M. T.	Ayden
*Fryar, C. H.	Oak Ridge
*Frye, Glenn R.	Hickory
Furman, Wm. H.	Henderson
Futrell, L. M.	Murfreesboro
*Futrell, W. E.	Greenville
Gage, L. G.	Charlotte
Gainey, John W.	Fayetteville
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.) O.A.L.R.	Wilmington
Gambill, I. S.	Elkin
Gamble, J. F.	Lincolnton
*Gamble, J. R.	Lincolnton
*Gambrell, Grover C.	Lexington
Garren, R. H., O.A.L.R.	Monroe
Garrenton, Cecil	Bethel
*Garrett, F. B.	Rockingham
*Garrison, D. A. (Hon.)	Gastonia
Garriss, F. H.	Lewiston
*Garvey, R. R.	Winston-Salem
*Gaskins, Lewis R.	Albemarle
*Gaul, Jno. Stuart	Charlotte
Gaw, L. B.	Greensboro
*Geddie, K. B.	Sanatorium
Gentry, Geo. W.	Roxboro
George, John C.	Oteen
*Gibbon, James	Charlotte
Gibbon, Robert L. (Hon.)	Charlotte
Gibbs, E. W.	Shelby
Gibbs, N. M.	New Bern
*Gibson, John S.	Gibson
Gibson, L. O.	Statesville
*Gibson, M. R., O.A.L.R.	Raleigh
Gill, Robert J.	Henderson
*Gilmore, C. M.	Greensboro
Gilmore, W. D.	State Sanatorium
Gilreath, Frank H. (Hon.)	N. Wilkesboro
*Glascock, Joy H.	Greensboro
Glenn, C. F.	Rutherfordton
*Glenn, Lucius N.	Gastonia
Godwin, G. C.	Oteen
*Gold, Ben	Shelby
Gold, Chas. F.	Rutherfordton
*Gold, T. B.	Shelby
Goldston, A. B.	Wilmington
*Goley, Willard Coe	Graham
*Goley, Wm. Rankin (Hon.)	Graham
*Goley, Wm. R.	Shallotte
*Goode, T. V.	Statesville
*Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
*Goodwin, O. S.	Apex
Gordon, Faith F.	Greensboro
*Gorham, H. J.	Durham
Goudelock, Jno. J.	Monroe
*Goudge, Mabel E.	West Durham
Gouge, A. E.	Bakersville
Gouger, Geo. J. (Hon.)	Concord
*Gove, Anna M. (Hon.)	Greensboro
*Grady, Jas. C. (Hon.)	Kenly
*Grady, Leland V.	Wilson, Rt. 2
Grady, Wm. Earle (Hon.)	Tryon
*Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
Grayson, C. S.	High Point
*Green, J. C.	Greenville
*Green, Thos. M.	Wilmington
Green, Wm. W.	Tarboro
*Greene, Jos. B., O.A.L.R.	Asheville
*Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Gregg, A. D.	Liberty
Grier, Charles T.	Shelter Island Heights, N. Y. (Moore Co.)
*Griffin, H. L.	Star
*Griffin, M. A.	Asheville
Griffin, W. R.	Asheville
*Griffith, F. W.	Asheville
Griffith, L. M., O.A.L.R.	Asheville
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
Grimes, W. L.	Winston-Salem
Groome, J. G.	High Point
Groves, R. B.	Lowell
*Gwyn, H. L.	Yanceyville
*Gyles, Roland C.	Siler City
Hackler, R. H.	Walnut Cove
*Hackney, Ben H.	Lucama
Hagaman, J. B.	Boone

Name	*Address*
*Halford, Jos. W.	Lillington
Hall, James S.	Wilmington
Hahn, Milton	Asheville
*Hall, J .Clegg	Albemarle
Hall, L. S.	Yadkinville
Ham, Clem	Greenville
Hamer, Douglas, Jr.	Lenoir
*Hamilton, John H.	Wilmington
Hammond, A. F.	Pollocksville
Hamrick, T. G.	Shelby
*Hand, Edgar H.	Charlotte
Hanes, F. M.	Winston-Salem
*Harbison, J. W.	Shelby
*Hardee, W. P.	Durham
*Harden, Graham	Burlington
*Harden, R. N.	Greensboro
*Hardin, E. R.	Lumberton
*Hardin, R. H.	Banner Elk
*Harding, S. A.	Mocksville
Hardy, Ira M., O.A.L.R.	Kinston
Harper, J. H.	Snow Hill
Hartsell, F. E.	Oakboro
Harrell, S. N.	Tarboro
Harrell, W. H.	Creswell
Harrill, L. B.	Caroleen
Harris, Arthur Graham	Fairfield
*Harris, F. R. (Hon.)	Henderson
Harris, J. H.	Raleigh
*Harris, W. T.	Troy
*Harrison, Edmund (Hon.)	Greensboro
*Harrison, Edward T.	High Point
*Harrison, H. H.	Asheville
Harriss, Andrew H. (Hon.)	Wilmington
Hart, Jno. E.	Wadesboro
*Hart, V. K.	Statesville
Hartsell, J. A.	Concord
Hathcock, Thos. A.	Norwood
*Harvey, W. W.	Greensboro
*Hatcher, M. A.	Hamlet
*Hayes, R. B.	Hillsboro
*Hays, B. K. (Hon.)	Oxford
Haywood, C. L., Jr.	Durham
Haywood, Hubert B., Jr.	Raleigh
Hayworth, C. A.	Asheboro
Head, W. T., Campobello, S. C., Rt. 4	(Rutherford Co.)
*Hedrick, C. R.	Lenoir
*Hege, J. Roy	Winston-Salem
Heighway, S. C.	Murphy
Helsabeck, R. S.	King
*Hemmingway, J. D.	Gastonia
*Hempbill, C. H.	Marion
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Jacksonville
Henderson, R. B.	Franklinton
*Henderson, S. McD.	Charlotte
*Henderson, T. B., O.A.L.R.,	Goldsboro
*Henry, T. B.	Rockingham
Hensley, Chas. A.	Asheville
Herbert, Fred Lee	Andrews
Herbert, Wm. P.	Asheville
Herman, Chas. B.	Statesville
Herring, Benj. S.	Wilson
Herring, R. A.	Greensboro
Hester, Jos. R.	Wendell
Hester, Wm.	Reidsville
*Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo (Hon.)	Henrietta
*Hicks, V. M., Oph.	Raleigh
*Highsmith, Charles	Dunn
*Highsmith, J. D.	Fayetteville
*Highsmith, J. F. (Hon.)	Fayetteville
*Highsmith, J. F., Jr.	Fayetteville
*Highsmith, Seavy	Fayetteville
Hill, J. N.	Murphy
*Hill, Wm. I.	Albemarle
Hines, E. R.	Rocky Mount
Hinnant, Milford	Micro
Hipp, Edw. R.	Charlotte
*Hocutt, Battle A.	Clayton
Hodge, A. R.	Severn
*Hodgin, H. H.	Red Springs
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Greenville
*Hollingsworth, E. T.	Goldsboro
Hollingsworth, Robt. E.	Mt. Airy
*Holloway, Joseph C.	Durham
*Holloway, Robert Lee.	West Durham
Hollyday, W. M., O.A.L.R.	Asheville
*Holmes, A. B.	Fairmont
*Holt, D. W.	Greensboro
Holt, T. J.	Warrenton
*Holt, Wm. P.	Erwin
*Holt, Wm. P., Jr.	Erwin
*Holt, Wm. T. (Hon.)	McLeansville
Holton, Thos. J.	Charlotte
*Hood, J. Sidney	Gastonia
*Hooker, John S.	Sanatorium
Hooks, Thel	Smithfield

Name	*Address*
Hooper, D. D.	Sylva
*Hooper, Jos. W.	Wilmington
*Hoover, C. H.	Crouse
Horsley, H. T.	Franklin
Horton, M. C., O.A.L.R.	Raleigh
Horton, W. C.	Raleigh
Houck, Albert F. (Hon.)	Lenoir
House, W. O.	
Houser, E. A.	Shelby
Houser, O. J.	Charlotte
*Hovis, L. W., O.A.L.R.	Charlotte
Howard, C. E.	Goldsboro
Howard, J. R.	Concord
Howe, Wm. B. W., Jr.,	Hendersonville
Howell, W. L.	Ellerbe
Howser, Forest M.	Cherryville
Hoyle, Hughes B.	Manteo
*Hubbard, Chas. C.	Farmer
*Hubbard, Fred C.	N. Wilkesboro
*Hudson, C. C.	Greensboro
*Huffines, T. R.	Asheville
Hunt, J. F.	Spindale
*Hunt, W. Bryce	Lexington
Hunter, Frank P.	Warrenton
*Hunter, J. P.	Cary
Hunter, L. W. (Hon.)	Charlotte, Rt. 1
*Hunter, Myers	Charlotte
*Hunter, M. C.	Huntersville
Hunter, W. B.	Cramerton
*Hurdle, S. W.	Winston-Salem
*Huston, Jno. W.	Asheville
Hutchins, E. M.	North Wilkesboro
*Hutchinson, S. S.	Bladenboro
Hyatt, A. L.	Kinston
Hyde, Francis Edward	Beaufort
*Ingersoll, Louise M.	Asheville
*Ingram, Chas B. (Hon.)	Mt. Gilead
Irwin, Hamner C.	Pocatella, Idaho (Mecklenburg Co.)
*Irwin, Henderson	Goldsboro
*Irwin, J. R. (Hon.)	Charlotte
*Ivey, H .B.	Goldsboro
Ivey, R. R., U.S.P.H.S.	Biltmore
*Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatsville
*Jackson, Walter Leo	High Point
Jacocks, W. P.	New York City (Lincoln Co.)
James, Albert W.	Monroe
*James, F. P.	Laurinburg
*James, W. D.	Hamlet
*Jarboe, Parran	Greensboro
Jarman, F. G.	Roanoke Rapids
Jenkins, Chas. L. (Hon.)	Raleigh
*Jennings, C. W., O.A.L.R.	Greensboro
*Jennings, R. G.	Thomasville
Jervey, A. J.	Tryon
Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.) O.A.L.R.	Wilmington
*John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
*Johnson, Floyd	Whiteville
*Johnson, Geo. W.	Wilmington
Johnson, Harry H.	Louisburg
*Johnson, Joseph L.	Bonlee
*Johnson, Harry L.	Greensboro
Johnson, John B.	Old Fort
*Johnson, J. R.	Ramseur
Johnson, N. M. (Hon.)	Durham
Johnson, Otis H.	Morehead City
Johnson, R. Lee	Gastonia
*Johnson, Thos. C.	Lumberton
*Johnson, W. A.	Reidsville
Johnson, W. C.	Canton
Johnson, Wingate M.	Winston-Salem
*Johnston, J. G., O.A.L.R.	Charlotte
*Johnston, W. W.	Manteo
*Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
Jones, Beverly N., O.A.L.R.	Winston-Salem
*Jones, Carey C.	Cary
Jones, Clara E. (Hon.)	Goldsboro
Jones, R. Duval	New Bern
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
Jones, W. M.	Gastonia
Jones, W. S.	Nashville
*Jones, Wm. M.	Greensboro
Jordan, Chas. S. (Hon.)	Asheville
*Jordan, S. R.	Pleasant Garden
*Jordan, T. M. (Hon.)	Raleigh
Jordan, Wm. S., O.A.L.R.	Fayetteville
Joyner, C. C.	Farmville
*Judd, Eugene C.	Raleigh
*Judd, James M.	Varina

Name	*Address*
*Julian, Chas. A. (Hon.)	Greensboro
*Jurney, Peter Claywell	Turnersburg
Justice, Gaston B.	Marion
*Kapp, Henry H.	Winston-Salem
*Keiger, Jas. A.	Greensboro
*Keiger, O. R.	Winston-Salem
*Keith, Marion Y.	Greensboro
Kelleher, L. B.	Charlotte
Kelly, Luther W.	Charlotte
Kende, Tibor Norbert	Astoria, N. Y. (Burke Co.)
*Kendrick, R. L.	Elizabeth City
*Kennedy, John P.	Charlotte
Kent, Alfred A. (Hon.)	Winter Park, Fla. (Caldwell Co.)
Kernodle, Chas. E.	Elon College
*Kerns, T. C., O.A.L.R.	Durham
Kerr, John D.	Clinton
*Kerr, Jas. E. (Hon.)	Winston-Salem
Kesler, R. C.	
Ketchie, J. M.	Salisbury
Kibler, W. H.	Morganton
Killian, Frank M.	Nantahala
Kimberly, David, Jr.	Hot Springs
King, Edward	Asheville
*King, E. S.	Wake Forest
*King, Parks M.	Charlotte
King, Richard M.	Concord
*Kinlaw, Wm. B.	Rocky Mount
*Kinsman, Henry F.	Hamlet
Kirby, Guy S.	Marion
*Kirby, W. L.	Winston-Salem
Kirk, W. R.	Hendersonville
Kirkpatrick, W. L.	Waynesville
Kirksey, James J.	Morganton
Kirksey, W. A.	Hope Mills
Kiser, W. C.	Lincolnton
*Kitchin, Thurman D.	Wake Forest
Kluttz, A. F.	Maiden
Kluttz, DeWitt	Washington
*Knight, Floyd L.	Sanford
*Knight, Wm. P. (Hon.)	Greensboro
Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
Koonce, S. Everett, O.A.L.R. (Hon.)	Wilmington
*Kornegay, Lemuel W.	Rocky Mount
Kutscher, G. W., Jr.	Swannanoa
Lackey, F. H.	Fallston
*Lackey, M. A.	Mooresville
*Lacy, Thos. A.	Raleigh
Lafferty, Robt. H.	Charlotte
*Lambert, C. F.	Spruce Pine
*Lambert, W. L.	Asheboro
*Lamm, I. W.	Raleigh
Lancaster, F. J.	Lexington
Landen, J. F.	Chinquapin
*Lane, Bessie	Raleigh
*Lane, John L., O.A.L.R.	Rocky Mount
*Lane, P. P.	Wilson
Larkin, E. G.	Washington
Lassiter, H. G.	Weldon
Lassiter, V. C.	Winston-Salem
Latham, Jos. R.	New Bern
*Laton, Jas. F., O.A.L.R.	Albemarle
Lattimore, E. B.	Shelby
*Laughinghouse, Chas. O'H. (Hon.)	Raleigh
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
Lea, J. I.	Tryon
Leak, W. G.	East Bend
*Ledbetter, Jas. McQ., O.A.L.R.	
*Lee, J. Marshall	Newton Grove
*Lee, Lawrence V.	Lattimore
*Lee, Mike	Kinston
Lee, R. E.	Lincolnton
*Lee, Thomas L.	Kinston
Leeper, Donald H.	Hiddenite
*Leinbach, Robt. F.	Charlotte
Lentz, C. M.	Albemarle
Lewis, Geo. W. (Hon.)	Wilson
Lewis, H. W. (Hon.)	Jackson
*Lilly, Jas. M., O.A.L.R.	Fayetteville
Lindberg, O. S.	Candler
Linville, A. Y. (Hon.)	Winston-Salem
*Linville, W. C.	Goldsboro
Lister, E. W.	Elizabeth City
Lister, J. L.	Mount Olive
*Little, E. E.	Statesville
Little, Lonnie M.	Statesville
*Livingston, E. A., O.A.L.R.	Gibson
Lloyd, B. B.	Carrboro
*Locke, Eva M.	White Rock
*Lockett, Everett A.	Winston-Salem
*Lockey, W. J.	Fallston
Logan, F. W. F.	Rutherfordton
*Long, Benj. Leroy	Glen Alpine
*Long, E. F.	High Point
Long, Glenn	Newton

Name	*Address*
Long, H. F. (Hon.)	Statesville
*Long, R. H.	Morganton
*Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
*Long, Z. F.	Rockingham
Looney, J. J. W.	Rocky Mount
*Lord, Marjery J.	Montreat
*Love, Bedford E.	Roxboro
Love, Wm. M.	Monroe
Lovelace, Thos. C.	Henrietta
*Lovill, Robt. J.	Mount Airy
Lowery, John R.	Salisbury
Lubchenko, N. E.	Harrisburg
Lutterloh, I. Hayden, Jr.	Sanford
*Lutterloh, I. H., Sr.	Sanford
Lyday, Abram E.	Penrose
*Lyday, C. E.	Gastonia
*Lyday, R. O.	Greensboro
Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
*Lyon, B. R.	Greensboro
Lyon, Henry Wise	Windsor
*MacConnell, John W., O.A.L.R.	Davidson
*MacFadyen, Paul R.	Concord
*MacNider, Wm. deB.	Chapel Hill
MacRae, J. D., Jr.	Asheville
*McAdams, C. R.	Belmont
McAnally, Jas. McG.	High Point
*McAnally, Wm. J. (Hon.)	High Point
McBane, T. W.	Pittsboro
*McBrayer, L. B. (Hon.)	Southern Pines
McBrayer, R.	Long Island, N. Y. (Hoke Co.)
McBryde, M. H.	Reidsville
*McCain, P. P.	Sanatorium
*McCain, Wm. R.	High Point
*McCall, A. C., O.A.L.R.	Asheville
McCanless, Wm. V.	Danbury
*McCampbell, John (Hon.)	Morganton
McChesney, W. W.	Gastonia
*McClees, E. C.	Elm City
McClelland, Joseph O.	Maxton
McCombs, C. J.	Monroe
McConnell, H. R.	Gastonia
McCoy, C. M.	Ahoskie
*McCoy, Thos. M.	Charlotte
McCotter, St. Elmo	Bayboro
McCracken, C. M.	Fairview
*McCracken, J. R., O.A.L.R.	Waynesville
*McCreary, A. B.	Rockingham
*McCuiston, A. M.	Kinston
*McCutchan, Frank	Salisbury
*McCutcheon, W. B.	Durham
*McDade, B. B.	Burlington
*McDaniel, L. E.	Jackson
McDowell, F. C.	Zebulon
*McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
*McFadden, R. H.	Charlotte
*McFadyen, O. L.	Fayetteville
*McGeachy, R. S. (Hon.)	Kinston
McGee, Jas. W. (Hon.)	Raleigh
*McGehee, Jno. Wm.	Reidsville
McGowen, Claudius	Plymouth
McGregor, Geo. D.	Charlotte
McGoogan, Benj. J.	McFarlan
McGuire, B. B.	Rainbow Springs
McIntosh, D. M.	Old Fort
*McIntosh, W. R.	Rockingham
*McIntyre, Stephen	Lumberton
*McIver, Lynn	Sanford
*McKay, Hamilton	Charlotte
*McKay, Jos. F. (Hon.)	Buies Creek
*McKay, Robert W.	Charlotte
McKay, W. P.	Fayetteville
McKee, John S.	Raleigh
*McKenzie, B. W.	Salisbury
*McKnight, R. B.	Charlotte
McLaughlin, C. S.	Charlotte
McLaughlin, J. E. (Hon.)	Statesville
McLean, Allen	Morganton
*McLean, E. K.	Charlotte
*McLean, John W.	Godwin
McLean, Peter	Laurinburg
*McLelland, W. D.	Mooresville
McLemore, Geo. A.	Smithfield
*McLeod, A. H.	Aberdeen
McLeod, J. H.	Fayetteville
*McLeod, W. G.	Southern Pines
McLesky, J. H.	Charlotte
McManus, W. L.	Greensboro
*McMillan, B. F. (Hon.)	Red Springs
McMillan, J. M.	Candor
*McMillan, R. D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
McNairy, Caroline	Lenoir

Name	*Address*
*McNeill, Jas. H.	North Wilkesboro
*McPhail, L. D.	Charlotte
*McPhaul, W. A.	Charlotte
*McPherson, C. W., O.A.L.R.	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D., O.A.L.R.	Durham
McRae, J. D., Jr.	Asheville
Mackie, N. W.	Yadkinville
*Macon, G. H.	Warrenton
Madison, W. H.	Wilmington
Mahoney, A. F.	Monroe
Mallett, E. P.	Hendersonville
*Malloy, S. A.	Yanceyville
*Maness, A. K.	Greensboro
*Mangum, C. P.	Kinston
Mangum, C. S.	Durham
*Mann, I. Thurman	High Point
Mann, Thos A.	
*Manning, I. H.	Chapel Hill
Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven
*Markham, Blackwell	Durham
*Marr, M. W.	Pinehurst
Marsh, Frank B.	Salisbury
*Martin, J. A.	Lumberton
*Martin, J. F.	Dunn
Martin, J. H.	Red Oaks
*Martin, J. W.	Roanoke Rapids
*Martin, Lester P.	Mocksville
*Martin, Moir S.	Mt. Airy
Martin, R. E.	East Bend
Martin, Sydnor L.	Leaksville
Martin, W. C., O.A.L.R.	Mocksville
*Martin, Wm. F.	Charlotte
Martin, W. J.	Davidson
Mason, C. N.	Harlowe
Mason, Manly	Newport
*Massey, C. C.	Smithfield
Matheson, James P.	Charlotte
*Mathews, M. L.	Sanford
*Mattheson, R. A.	Raeford
Matthews, B. B.	Shelby
Matthews, James O.	Clinton, R.F.D.
*Matthews, Vann M.	Charlotte
*Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill (Duplin County)
Mayberg, I. W.	Selma
*Meadows, W. J.	Greensboro
Mears, George A.	Asheville
Mebane, W. C.	Wilmington
Melvin, W. C.	Linden
Menzies, H. C. (Hon.)	Hickory
Menzies, H. H.	Hickory
Merritt, John H.	Woodsdale, R. 1
Micheaux, Edward R. (Hon.)	Greensboro
Miles, May S.	Greensboro
*Milham, C. G.	Sanatorium
Millander, C. W.	Asheville
Miller, J. F.	Marion
Miller, O. L.	Gastonia
Miller, R. C.	Gastonia
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
Misenheimer, C. A. (Hon.)	Charlotte
Misenheimer, Thos. M.	Charlotte
*Misenheimer, E. A.	Concord
*Mitchel, G. T.	Jennings
*Mitchell, Geo. W.	Wilson
*Mitchell, Paul H.	Ahoskie
*Mitchell, R. C.	Mt. Airy
Mitchell, W. F.	Shelby
*Mitchell, Z. P.	Weldon
*Mitchener, J. S., O.A.L.R.	Raleigh
Mock, Frank L.	Lexington, R. 3
Moncure, Wm., Jr.	
*Monk, G. M.	State Hospital, Raleigh
*Monk, Henry L.	Salisbury
Monroe, C. R.	Pinehurst
*Monroe, J. P.	Sanford
Montague, S. J.	Durham
*Montgomery, Harry M.	Burlington
Montgomery, John C. (Hon.)	Charlotte
*Montgomery, Kenneth E.	Asheville
Moore, Alexander W.	Charlotte
*Moore, C. E.	Greensboro
*Moore, Chas. E. (Hon.)	Wilson
*Moore, D. B.	Badin
*Moore, D. F.	Shelby
Moore, Edwin G. (Hon.)	Elm City
*Moore, Henry B.	Graham
*Moore, Julian A.	Asheville

Name	*Address*
Moore, J. E.	Mount Olive
*Moore, Oren	Charlotte
Moore, R. A.	Charlotte
*Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
*Moore, W. Houston	Wilmington
Moore, Wm. James	Asheboro
Morgan, B. E.	Asheville
*Morgan, G. A.	Asheville
*Morrill, D. S.	Farmville
Morrill, Jenness	Falkland
Morris, G. Dillon	Goldsboro
*Morris, Geo. B.	Goldsboro
*Morris, Jos. A.	Oxford
Morrow, Wm. C.	Andrews
Morton, J. X.	Faison
*Moseley, Chas. W. (Hon.)	Greensboro
Moseley, Z. V.	Kinston
Moser, W. D.	Burlington
Moss, G. O.	Cliffside
*Motley, Fred Elliott	Charlotte
*Mudgett, W. C.	Southern Pines
Mullen, Malcolm P.	Wilson
Munroe, H. Stokes	Charlotte
*Munroe, J. P. (Hon.)	Charlotte
*Munt, H. F.	Winston-Salem
*Murchison, D. R.	Wilmington
*Murphy, Gibbons W.	Asheville
*Murphy, John G., O.A.L.R.	Wilmington
*Murphy, W. B.	Snow Hill
*Murray, R. L.	Raeford
*Myers, Alonzo	Charlotte
Myers, D. L.	Jennings
*Myers, John Q.	Charlotte
*Nalle, B. C.	Charlotte
*Nance, C. L.	Charlotte
*Nash, J. Fred	St. Paul
Neal, Kemp P.	Raleigh
Neal, Paul N.	Raleigh
*Neblett, H. C.	Charlotte
Nelson, R. J. (Hon.)	Robersonville
Nesbitt, Charles T.	Wilmington
Neville, H. C.	Scotland Neck
*Newby, G. E.	Hertford
Newcombe, A. P., Jr.	Henderson
*Newell, H. A., O.A.L.R.	Henderson
Newell, J. O.	Louisburg
Newell, Leone B.	Charlotte
Newman, Harold H.	Salisbury
Newman, L. B.	Andrews
Newton, Howard L.	Charlotte
Nichols, Alvin A.	Sylva
Nichols, Asbury S.	Sylva
*Nichols, Austin F.	Roxboro
*Nichols, Rhodes E.	Durham, Rt. 8
Nicholson, B. M.	Enfield
Nicholson, John L.	Washington
Nicholson, C. R.	Statesville
Nicholson, N. G.	Mt. Gilead
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
*Nisbet, D. Heath	Charlotte
Nisbet, Walter O.	Charlotte
Noble, R. J. (Hon.)	Selma
Noble, R. P.	Raleigh
Nobles, Jos. E.	Greenville
*Noblin, Roy L.	Oxford
Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norburn, C. S.	Asheville
Norburn, R. L.	Asheville
Norfleet, A. C.	Tarboro
Norfleet, E. P.	Roxobel
Norman, J. H.	Raleigh
Norman, J. S., O.A.L.R.	Hickory
*Norris, Henry	Bryn Mawr, Pa. (Rutherford Co.)
*Northington, J. M.	Charlotte
*Nowell, S. C.	Hickory
Nowlin, Preston	Charlotte
Oates, George	Grover
*O'Briant, A. L.	Sanford
Odell, J. W.	Dunn
*Ogburn, H. H.	Greensboro
Ogilvie, Hanson S.	Asheville
*Olive, P. W.	Fayetteville
*Oliver, A. S.	Raleigh
*Ormand, J. W.	Monroe
*Orr, Chas. C.	Asheville
Orr. P. B.	Asheville
*Orr. W. J. B.	Smithfield
Owen, J. F.	Dix Hill, Raleigh
*Ownbey, Arthur D.	Greensboro
Pace, K. B.	Greenville
*Paddison, J. R.	Kernersville
Page, B. W.	Trenton
Palmer, M. C.	Tryon
*Palmer, R. W.	Gulf

Name	*Address*
Parker, Chas. M.	Portsmouth, Va. (Bertie Co.)
Parker, G. E.	Benson
Parker, Geo. F.	Asheville
*Parker, H. R.	Greensboro
*Parker, J. W.	Seaboard
Parker, O. L.	Clinton
*Parker, Paul G.	Erwin
Parks, Hugh	Elkin
Parks, W. B.	Gastonia
*Parrott, Albert DeK.	Kinston
*Parrott, Jas. M. (Hon.) O.A.L.R.	Kinston
Parrott, M. C.	Kinston
Parrott, Wm. T.	Kinston
*Parsons, W. H.	Ellerbe
Pate, J. F.	East Flat Rock
*Pate, James Frederick, O.A.L.R.	Greensboro
*Pate, Jas. G.	Gibson
*Patman, W. L.	Greensboro
Patrick, Geo. R., Jr.	Bessemer City
*Patrick, J. E.	Bahama
*Patterson, Fred M.	Greensboro
*Patterson, Jno. A., O.A.L.R.	Concord
Patterson, Jos. F.	New Bern
*Patterson, Reid	Charlotte
Payne, J. W.	East Flat Rock
*Pearson, H. O.	Pinetops
*Pearson, Raymond	Monroe
Peek, W. A.	Ramsaytown
Peeler, Clarence N., O.A.L.R.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
Peete, C. H.	Warrenton
Pegram, R. W. S.	Canton (Wilkes Co.)
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
Perkins, David R.	Marshville
Perkins, Jno. R., O.A.L.R.	Winston-Salem
Perry, A. H.	Wood
*Perry, D. R.	Durham
*Perry, E. M.	Rocky Mount
Perry, H. B.	Boone
*Perry, H. G.	Louisburg
Perry, Leora	Charlotte
Perry, Robt. E.	Greensboro
Person, Edgar C., O.A.L.R.	Pikeville
*Person, J. B., Jr. (Hon.)	Selma
Person, H. M.	Goldsboro
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
Peterson, C. A.	Spruce Pine
Peterson, W. C.	Wilmington
*Petrie, Robt. Wm., O.A.L.R.	Lenoir
Petteway, Geo. H.	Charlotte
*Pfohl, Samuel F. (Hon.)	Winston-Salem
Phifer, Edward M.	Morganton
*Phillips, C. C.	Charlotte
*Phillips, C. H.	Thomasville
Pickett, John A.	Burlington R. F. D. 1
Pittman, E. E.	Oak City
*Pittman, M. A.	Wilson
*Pittman, R. L.	Fayetteville
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
*Pool, B. B.	Winston-Salem
Poole, C. G.	Winston-Salem
*Pope, Henry T.	Lumberton
*Post, J. J.	Greensboro
*Poston, J. Lewis	Statesville
*Powell, Albert H.	Durham
*Powell, Wm. H., Jr.	Fayetteville
Powell, Jesse A.	Edenton
Powers, John B.	Wake Forest
Pressly, Geo. W. (Hon.)	Charlotte
Pressly, J. L.	Statesville
Pressly, J. M.	Belmont
Price, H. L.	Taylorsville
Price, K. A.	Hickory
Pritchard, G. L.	Black Mountain
Proffit, Thos. J.	Elk Park
*Proctor, I. M.	Raleigh
Pugh, Chas. H.	Gastonia
Purdy, J. J.	Oriental
*Query, Richard Z.	Charlotte
Quickel, Thos. C., O.A.L.R.	Gastonia
Quinn, Robert F.	Magnolia
*Rainey, W. T.	Fayetteville
Ramseur, W. L.	Kings Mountain
Ramsey, James G.	Cleveland, O. (Rowan Co.)
*Raby, J. G.	Tarboro
*Rand, C. H.	Fremont
Rand, E. G.	Raleigh
Rankin, P. R.	Mount Gilead

Name	*Address*
Rankin, R. B.	Concord
*Rankin, S. W.	Winston-Salem
*Rankin, Watson S.	Charlotte
*Ranson, J. Lester	Charlotte
*Ravenel, S. F.	Greensboro
Ray, F. L.	Charlotte
*Ray, John B.	Leaksville
Ray, O. L.	Raleigh, Rt. 1
Ray, R. C.	Beaver Creek
*Reaves, C. R., O.A.L.R.	Greensboro
Reaves, H. G.	Ann Arbor, Mich. (Guilford Co.)
*Reaves, W. P., O.A.L.R.	Greensboro
Redding, Alex H. (Hon.)	Cedar Falls
*Redfern, T. C.	Winston-Salem
Reed, D. H.	Maxton
Reed, John F.	Concord
*Reeves, A. F.	Asheville
Reeves, B. E.	W. Jefferson
*Reeves, G. F.	Nashville
*Reeves, J. L.	Canton
*Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
Reid, Thomas N.	Matthews
*Reitzel, C. E.	High Point
*Reynolds, C. V. (Hon.)	Asheville
Rhodes, James S.	Williamston
*Rhudy, Booker E.	Greensboro
*Rhyne, Robt. E.	Gastonia
Rhyne, S. A.	Statesville
Richardson, F. H.	Black Mountain
Richardson, Jas. C.	Charlotte
*Richardson, Marvin T.	Raleigh
Richardson, W. P.	Lenoir
Ricks, Leonard E.	Fairmont
Riddle, J. B.	Morganton
*Riggsbee, A. E.	Durham
Ring, Joseph W.	Elkin
*Ringer, Paul H.	Asheville
Roberson, Charles	Greensboro
*Roberson, Foy	Durham
*Roberts, B. W.	Durham
Roberts, W. N.	Gastonia
*Robertson, E. M.	Durham
*Robertson, James F.	Wilmington
*Robertson, J. N.	Fayetteville
Robertson, W. Burdette	Burnsville
*Robinson, D. E.	Burlington
*Robinson, E. E.	Concord
*Robinson, J. D.	Wallace
Robinson, W. A.	Old Fort
Robinson, W. F.	Mars Hill
Robinson, W. J.	Creston
Rodgers, Jas. Rufus	Raleigh
*Rodgers, W. D., Jr.	Warrenton
Rodman, J. C. (Hon.)	Washington
Rodman, R. B.	Wilmington
*Rodwell, Jno. W. (Hon.)	Mocksville
Rogers, W. A. (Hon.)	Franklin
*Root, Aldert S.	Raleigh
*Rose, David J.	Goldsboro
Rose, T. H.	Rocky Mount
Rose, Jim	Goldsboro
*Ross, Geo. H.	East Durham
*Ross, Otho B.	Charlotte
*Ross, Robert A.	Durham
Ross, Thos. W.	Charlotte
Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
*Royal, Ben F.	Morehead City
*Royal, D. M.	Salemburg
*Royster, Hubert A. (Hon.)	Raleigh
Royster, S. S.	Shelby
Rozier, R. G.	Cerro Gordo
*Royster, Thomas H.	Roanoke Rapids
*Royster, Thos. S.	Henderson
Royster, W. I. (Hon.)	Raleigh
Rucker, A. A.	Rutherfordton
*Rudisill, J. D.	Lenoir
*Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Russell, S. L.	Yadkinville
*Sabiston, Frank, O.A.L.R.	Kinston
*Sadler, R. C.	Whiteville
Saliba, John	Elizabeth City
Saliba, M. M., O.A.L.R.	Wilson
Salley, E. McQueen	Saluda
*Salmons, H. C.	Elkin
Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
Sams, W. A.	Marshall
Sasser, T. J.	Charlotte
Saunders, Jos. H.	Williamston
*Saunders, S. Stewart	High Point
*Sawyer, Chas. J. (Hon.) O.A.L.R.	Windsor
*Sawyer, W. W.	Elizabeth City
Schaffle, Karl	Asheville

Name	*Address*
Schallert, P. O.	Winston-Salem
Schaub, O. P., O.A.L.R.	Winston-Salem
*Schenk, Sam M.	Shelby
*Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
*Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
*Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scott, S. F.	Union Ridge
Scruggs, F. B.	
Scruggs, W. H.	Gastonia
Scruggs, W. Marvin	Charlotte
*Seay, T. W.	East Spencer
Sessoms, E. T.	Roseboro
Sevier, D. E. (Hon.)	Asheville
Sevier, J. T. (Hon.)	Asheville
Sexton, C. H.	Dunn
*Seawell, Marion H.	Jackson
*Shafer, Irving E.	Salisbury
Shamburger, J. B. (Hon.)	Star
*Sharpe, C. R.	Lexington
*Sharpe, F. A.	Greensboro
*Sharpe, Frank L.	Statesville
*Sharp, O. L.	Greensboro
*Shaver, W. T.	Badin
Shaw, J. A.	Fayetteville
*Shaw, W. G.	Wagram
*Shelburne, P. A.	Greensboro
Shellum, O. W.	Denver
Sherrell, C. L.	Statesville
Sherrill, H. R.	Lawndale
*Shields, Henry B. (Hon.)	Carthage
Shirley, H. C., O.A.L.R.	Charlotte
*Shohan, Jos.	Greensboro
*Shore, Clarence A.	Raleigh
Shore, T. W.	Boonville
*Shreve, J. R.	Brown Summit
Shuford, Jacob H.	Hickory
*Shull, J. Rush	Charlotte
*Sidbury, J. B.	Wilmington
*Sigman, F. G.	Spencer
*Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Youngsville
*Simmons, L. L., O.A.L.R.	Greensboro
*Simmons, R. R.	Winston-Salem
*Simpson, H. H.	Altamahaw
Singletary, G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
*Sisk, C. N.	Raleigh
*Skinner, Louis C.	Greenville
*Slate, John S.	Winston-Salem
Slate, J. W.	High Point
Slate, Wesley C.	Spencer
Sloan, A. B.	Mooresville
*Sloan, D. B., O.A.L.R.	Wilmington
*Sloan, H. L., Oph.	Charlotte
Sloan, Wm. H.	Garland
Slocumb, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
Small, Victor R.	Clinton
*Smith, A. Jones	Black Creek
Smith, Alick T.	Greensboro
*Smith, Annie T.	Durham
Smith, B. R.	Asheville
Smith, C. T.	Rocky Mount
*Smith, D. L.	Saluda
*Smith, F. C., O.A.L.R.	Charlotte
Smith, F. G.	Wilson
*Smith, F. L.	Burlington
Smith, G. M.	Monroe
*Smith, J. A.	Lexington
Smith, Joseph	Greenville
*Smith, John McNeill	Rowland
*Smith, L. J.	Wilson
*Smith, O. F.	Scotland Neck
*Smith, Paul	Pikeville
Smith, R. A. (Hon.)	Goldsboro
Smith, R. C.	Grifton
*Smith, R. E.	Mt. Airy
*Smith, Sidney	Raleigh
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, W. G.	Wendell
*Smith, William Gordon	Thomasville
*Smith, Wm. H.	Goldsboro
Smith, Jos. E.	Windsor
Smith, James T.	Westfield
Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
*Soady, J. H.	Garner
Somers, L. P.	New Castle
Sossomon, J. C.	Midland
*Sowers, Roy G.	Jonesboro
*Sowers, Jacob L.	Lexington
Spainhour, Ellis H. (Hon.)	Winston-Salem

Name	*Address*
*Sparrow, Thos. DeL.	Charlotte
Speas, D. C.	Winston-Salem
*Speas, W. P., O.A.L.R.	Hickory
Speed, J. A.	Durham
Speight, John W.	Roper
Speight, J. A.	Rocky Mount
Spencer, Frederick B.	Salisbury
Spencer, Wm. O. (Hon.)	Winston-Salem
Spicer, John	Goldsboro
Spicer, Richard W.	Winston-Salem
*Spicer, William	Goldsboro
Spiggle, C. H.	Grimesland
*Spikes, N. O.	Durham
*Spoon, A. O.	Greensboro
*Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
Sprinkler, W. M.	Waynesville
*Spruill, Jos. L.	Jamestown
*Sprunt, W. H., Jr.	Winston-Salem
*Squires, Claude B.	Charlotte
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge
*Stanford, Lois Foote	Durham
*Stanford, W. R.	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
Stanton, T. M.	Greensboro
*Starr, H. F.	Greensboro
Staton, H. V.	Hendersonville
Steel, Wm. C.	Mount Olive
Stempson, R. T.	East Bend
*Stevens, M. L. (Hon.)	Asheville
Stevens, R. S.	Princeton
Stevens, W. L.	Shiloh
Stewart, J. T.	Summerfield (R.F.D.)
Stirewalt, N. S.	High Point
Stockton, W. I.	Carthage (R.F.D.)
Stokes, Jas. E.	Salisbury
Stokes, P. B.	Kings Mountain
Stone, G. E.	King
Stone, Geo. G.	Greenville
Stone, M. L.	Rocky Mount
*Stone, Wesley M.	Dobson
Stoner, I. J.	West Durham
*Straughan, J. W.	Warsaw
*Street, M. E.	Glendon
*Strickland, E. F. (Hon)	Winston-Salem
*Strickland, E. L.	Wilson
Strickland, W. M.	Wendell
Stringfellow, Jas. L.	Waynesville
Stringfield, Samuel L.	Waynesville
Stringfield, Thos. (Hon.)	Waynesville
*Strong, Chas. M. (Hon.)	Charlotte
Street, C. A.	Winston-Salem
Strong, Wm. M.	Charlotte
*Strosnider, Chas. F.	Goldsboro
Strowd, W. A.	Durham
Suggett, O. L.	Asheville
*Suiter, W. G.	Weldon
Sullivan, Claude H.	Charlotte
Summerell, E. M. (Hon.)	China Grove
Summers, Chas. L., 11 E. Chase St. Baltimore, Md., (Forsyth Co.)	
Sumner, E. A.	High Point
*Sumner, G. H.	Ashboro
Sumner, Howard L.	Asheville
Sumner, Thos. W.	Fletcher
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
*Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
Sweaney, H. M.	Durham
Swindell, C. L.	Wilson
Swindell, Lewis H.	Washington
*Symington, John	Carthage
Talley, J. S.	Troutman
*Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, Roy C.	Statesville
Tatum, Walter Lowe	Salisbury
*Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.	Washington
*Tayloe, John Cotton	Washington
*Tayloe, Joshua, Jr.	Washington
*Taylor, E. H. E.	Morganton
*Taylor, F. R.	High Point
Taylor, G. W.	Mooresville
Taylor, H. C.	Charlotte (Chadwick Station)
Taylor, J. E.	Morganton
Taylor, James N.	Greensboro
*Taylor, James T.	Greensboro
*Taylor, R. W.	Oxford
Taylor, S. R., O.A.L.R.	Greensboro
Taylor, T. G.	Leaksville
*Taylor, Wesley	Greensboro
Taylor, Wm. L.	Oxford
Taylor, W. I.	Burgaw
*Teague, S. E.	Hamlet

Name	*Address*
*Templeton, James M.	Cary
*Templeton, J. Y.	Mooresville
*Tennent, G. S. (Hon.) O.A.L.R.	Asheville
*Terry, Geo. H. B.	Oteen
*Terry, J. R.	Lexington
Terry, P. R.	Asheville
*Terry, Wm. Calvin	Hamlet
Thacker, J. H.	Reidsville
*Thaxton, B. A.	Roxboro
*Thigpen, H. G.	Scotland Neck
*Thomas, C. D.	Sanatorium
*Thomas, J. G.	Greensboro
*Thomas, W. Clyde	Siler City
*Thomas, W. N.	Oxford
Thompson, A. C.	Asheville
*Thompson, A. F., O.A.L.R.	Troy
*Thompson, C. D.	High Point
*Thompson, Cyrus	Jacksonville
*Thompson, Edg. S.	Winston-Salem
*Thompson, Hugh A.	Raleigh
*Thompson, J. M.	Mebane
Thompson, Joseph W.	Creedmoor
*Thompson, Malcolm D.	Greenville
*Thompson, S. R.	Charlotte
Thompson, S. W., Jr.	Morehead City
Thorp, A. T.	Rocky Mount
Thurston, Asa	Taylorsville
Tidwell, L. E.	Andrews
Tilson Jacob Watson	Marshall
Timberlake, C. V.	Youngsville
Tillotson, S. F.	Pilot Mountain
*Todd, L. C.	Charlotte
Townsend, M. L.	Washington, D. C. (Mecklenburg Co.)
*Toy, Calvert R.	Chapel Hill
Triplett, W. R.	Purlear
*Trivette, W. A.	Hamptonville
*Troxler, R. M.	Burlington
Tucker, Jno. H.	Charlotte
Turlington, W. T.	Wilmington
*Turner, H. G.	Raleigh
*Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
*Tuttle, Reuben G.	Winston-Salem
Tydeman, F. W. L.	St. Louis, Mo. Care of Roxana Petrole Corp. (Mecklenburg Co.)
Tyler, E. R.	Durham
*Tyner, Carl V.	Leaksville
*Tyson, J. J.	Ayden
*Tyson, T. D.	Mebane
*Underwood, O. E.	Roseboro
Upchurch, Robt. T.	Henderson
Upchurch, R. W.	Durham
*Utley, H. H.	Benson
*Valk, A. deT.	Winston-Salem
*Vann, H. M.	Wake Forest
Vann, J. R., Jr.	Spring Hope
Van Epp, Owen B.	Cashiers
*Van Poole, C. M. (Hon.)	Salisbury
*Verdery, W. C.	Fayetteville
Verner, Carl Hugh	Forest City
***Vernon, Jas. W.**	Morganton
*Vestal, Willis J. (Hon.)	Lexington
Vick, George D.	Selma
Waddell, Robt. L.	Mooresville
Wadsworth, H. B.	New Bern
*Wakefield, Harry A., O.A.L.R.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Burlington
*Walker, L. D.	Charlotte
Walker, L. K.	Ahoskie
Walker, Walter E., O.A.L.R.	Burlington
Wall, R. L.	Winston-Salem
*Walters, Chas. M.	Burlington
Wannamaker, Edw. J., Jr.	Charlotte
Wanstrom, Ruth	Asheville
Ward, Jesse E.	Robersonville
Ward, I. A.	Elizabeth City
*Ward, John LaB.	Asheville
Ward, Vernon A.	Robersonville
Ward, Wm. H. (Hon.) O.A.L.R.	Plymouth
Ward, W. T.	Raleigh
Warren, John W.	Edenton
*Warren, R. F.	Prospect Hill
*Warren, Wm. E.	Williamston
*Warrick, L. A.	Goldsboro
Watkins, F. B.	Morganton
Watkins, Geo. S.	Oxford
Watkins, G. T.	Durham
Watkins, John A.	Asheville
*Watkins, W. M.	Durham
Watson, John B.	Raleigh
*Watson, Leon	Broadway

Name	*Address*
*Watson, Paul S.	Oakboro
*Watson, Thos. M.	Wilmington
*Weathers, Bahnson	Roanoke Rapids
Weathers, R. R.	Knightdale
Weaver, Henry B. (Hon.)	Asheville
Weaver, H. S.	Hamptonville
Weaver, W. J.	Rt. 4, Asheville
Webb, B. G.	Andrews
*Webb, W. P.	Rockingham
Weddington, J. L.	Henderson
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
West, B. C.	Kinston
West, C. F.	Kinston
*West, Louis N., O.A.L.R.	Raleigh
West, Robert M.	Salisbury
Wharton, Chas. R.	Ruffin
*Wharton, L. D. (Hon.)	Smithfield
Wheeler, J. H.	Henderson
Whelpley, Frank L.	Goldsboro
*Whichard, M. P.	Edenton
*Whicker, Guy L.	Kannapolis
Whisnant, Albert N. (Hon.)	Charlotte
*Whitaker, Paul F.	Kinston
*Whitaker, R. B.	Whiteville
White, John W. (Hon.)	Wilkesboro
White, R. A.	Asheville
White, Thos. P.	Charlotte
White, W. H. C.	Elizabeth City
White, W. M.	Lenoir
Whitehead, Edward	Salisbury
*Whitehead, S. L.	Asheville
Whitehurst, E. B.	Beaufort
Whitfield, Wm. Cobb (Hon.)	Grifton
Whitley, Ayer,	Matthews
Whittington, Claude	Greensboro
Whittington, Jas. B.	Winston-Salem
*Whittington, W. W.	Snow Hill
Widenhouse, M. A.	Concord
Wiest, Paul F.	Asheville
Wiggins, J. C.	Winton-Salem
Wilcox, J. W.	Patterson, N. J.
Wilkerson, Charles B.	Raleigh
*Wilkerson, Charles E.	Greensboro
Wilkerson, J. B.	Rosman
Wilkes, Grover C.	Sylva
*Wilkes, Marcus B.	Laurel Hill
*Wilkins, J. C.	Haw River
*Wilkins, J. W., O.A.L.R.	Mt. Olive
*Wilkins, R. B., O.A.L.R.	Raleigh
Wilkins, Samuel A.	Dallas
Wilkinson, C. T.	Wake Forest
*Williams, Claude B.	Elizabeth City
Williams, James Marcus	Warsaw
*Williams, J. H.	Sanatorium
*Williams, John D. (Hon.)	Guilford Station
*Williams, L. L.	Asheville
Williams, L. P.	Edenton
Williams, N. G.	Franklin
Williams, Lester L.	Fayetteville
Williams, R. C.	Wallace
Williams, Wm. Norman	Tabor
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
Willis, W. M.	Farmville
*Wilson, Albert R. (Hon.)	Greensboro
Wilson, Clarence L.	Lenoir
*Wilson, N. G.	Madison
Wilson, Robert B.	Clinton
*Wilson, W. G.	Smithfield
*Windley, R. E.	Washington
Wingate, G. C.	Charlotte
Winstead, E. G.	Belhaven
Winstead, J. A.	Nashville
*Winstead, J. L.	Greenville
Winston, A. R.	Franklinton
*Winston, P. H.	Raleigh
Wiseman, P. H.	Avondale
Wishart, Wm. E.	Charlotte
*Withers, J. J.	Davidson
*Wolfe, H. C., O.A.L.R.	Greensboro
Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
Wood, J. W.	Boiling Springs
*Woodard, A. G., O.A.L.R.,	Goldsboro
*Woodard, C. A.	Wilson
Woodard, E. D.	New Bern
*Woodard, G. B.	Wilson
*Woodcock, John H.	Hendersonville
Woodley, C. B.	Kinston
*Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
*Woodson, Charles W.	Salisbury
Woodward, J. G.	Asheville
Wooten, Amos Monroe	Pinetops
*Wooten, W. I.	Greenville

Name	*Address*
*Wright, J. B., O.A.L.R. (Hon.)	Raleigh
Wright, O. E.	Winston-Salem
Wright, R. H.	Philadelphia (Pitt Co.)
Wooten, Floyd P.	Kinston
*Wyatt, A. T.	Lillington
*Wyatt, H. L.	Greensboro
*Wyatt, Wortham	Winston-Salem
*Wylie, W. DeK.	Winston-Salem
*Yarborough, Frank R.	Cary
*Yarborough, R. F. (Hon.)	Louisburg
*Yoder, Paul A.	Winston-Salem
*Yokeley, Raymond V.	Thomasville
*York, Alexander Arthur	High Point
Young, G. McD.	Postell
Younge, J. G.	Asheville
*Yow, I. A.	Concord
Zimmerman, Robert U.	Lexington

ROSTER OF MEMBERS FOR 1930

BY COUNTIES

NOTE.—Every physician in the state whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of the opportunity. Anyone finding an error should report it to the secretary of the society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	Licensed	Joined State Society
President: S. A. Malloy, Yanceyville; Ky. School Med., 1897....	1898	1903
Secretary: B. B. McDade, Burlington; Univ. of Md.....	1918	1920
Anderson, Chas. A., (Hon.) Burlington; Coll. P. and S., Balt., 1901.....	1893	1896
Bell, F. O., Burlington.....	....	....
Braddy, Wade Hampton, Burlington; Univ. of N. C., 1909.....	1909	1913
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920.....	1920	1922
Carlyle, J. B., Burlington; Jeff. Med. Coll., 1926.....	1926	1928
Carrington, G. L., Burlington; Johns Hopkins, 1920.....	1920	1925
Ellington, A. J., Burlington; Columbia Univ., 1915.....	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924.....	1924	1924
Goley, Wm. R., Graham (Hon.); P. and S., Balt., 1885.....	1885	1893
Gwyn, H. L., Yanceyville; Med. Coll. Va., 1923.....	1923	1925
Harden, Graham, Burlington; Univ. of Pa., 1919.....	1920	1922
Kernodle, Chas. E., Elon College; Univ. of Md., 1911.....	1911	1920
McPherson, C. W., Burlington; Univ. of Md., 1910.....	1910	1912
McPherson, R. G., Saxapahaw; Univ. of N. C., 1908.....	1908	1909
Montgomery, Harry M., Burlington; N. C. Med. Coll., 1903....	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920.....	1920	1923
Moser, W. D., Burlington; Univ. of N. C., 1910.....	1910	1910
Pickett, J. A., Burlington, R.F.D., 1; Univ. of Tenn. Coll. of Med., 1894.....	1894	1904
Robinson, D. E., Burlington; Grad. Harvard Med. Coll., 1927....	1929	1930
Scott, S. F., Union Ridge; Univ. of Pa., 1918.....	1918	1920
Simpson, H. H., Altamahaw; Univ. of Md., 1925.....	1925	1926
Smith, F. L., Burlington; Univ. of Pittsburgh, 1927.....	1927	1928
Spoon, S. C., Graham; Univ. of Md., 1918.....	1918	1920
Thompson, J. M., Mebane; Univ. of N. C., 1909.....	1909	1920
Troxler, R. M., Burlington; Univ. of Md., 1914.....	1914	1915
Tyson, T. D., Mebane; Univ. Coll. of Med., Richmond, 1899...	1899	1904
Walker, J. B., Burlington; Med. Coll. Va., 1914.....	1914	1916
Walker, Walter E., Burlington; Med. Coll. of Va., 1903.....	1903	1905
Walters, C. M., Burlington; Univ. of Md. and P. and S., Balt., 1908.....	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911....	1911	1919
Wilkins, J. C., Haw River; Univ. of Md., 1911.....	1911	1920

ANSON COUNTY

President:	....	....
Secretary:	....	....
Allen, Chas. I., Wadesboro; Columbia Univ. Coll. P. and S., 1913	1913	1922
Bennett, Jos. H., Wadesboro; Univ. of Md., 1894	1894	1904
Covington, Platt W., 1479 Harrison Ave., Salt Lake City, Utah; Univ. of Md., 1908	1908	1914
Davis, J. M., Wadesboro; Columbia Univ., 1913	1913	1920
Hart, Jno. E., Wadesboro; P. and S., Balt., 1897	1897	1904
McGoogan, Benj. J., Morven; Univ. of Md., 1912	1912	1923

ASHE COUNTY MEDICAL SOCIETY

President: Thos. J. Jones, Lansing; Lincoln Mem. Univ., 1895	1889*	1885
Secretary:	....	....
Jones, T. Lester, Lansing; Va. Med. Coll., 1909	1909	1917
Ray, R. C., West Jefferson; Med. Coll. of Va., 1916	1916	1917
Reeves, B. E., West Jefferson; P. and S., Balt., 1891	1891	1924
Robinson, W. G., Creston; Univ. Med. Coll. of Kansas City, 1904	1907	1917

AVERY COUNTY SOCIETY

President: W. B. Burleson, Plumtree; Univ. Md., 1915	1915	1916
Secretary: R. H. Hardin, Banner Elk; N. C. Med. Coll., 1914	1914	1919
Proffit, Thos. J., Elk Park; Univ. Louisville Med. Dept., 1903	1903	1914
Sloop, Eustace H., Crossnore; N. C. Med. Coll., 1905 ,Jeff. Med. Coll., 1908	1905	1909
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President: Joshua Tayloe, Jr., Washington; Univ. of Pa., 1923	1923	1926
Secretary: John Cotton Tayloe, Washington; Univ. of Pa., 1922	1924	1925
Bonner, J. B., Washington; Univ. of Md. School of Med. and Coll. P. and S.,1918	1918	1920
Brown, E. M., Washington; Bellevue Hosp. Med. Coll., 1896	1896	1901
Carter, H. W., Washington; Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatesville; P. and S., Balt., 1893	1893	1896
Kluttz, DeWitt, Washington; Grad. Univ. of Pa., 1918	1919	1921
Larkin, E. W., Washington; N. C. Med. Coll., 1917	1920	1922
Mariner, N. B., Belhaven; Univ. Coll. of Med. Va., 1903	1903	1903
Nicholson, John L., Washington; Univ. of Md. and Coll. P. and S., 1904	1904	1904
Nicholson, P. A., Washington (Hon.); P. and S., Balt., 1889	1889	1890
Nicholson, Sam T., Washington (Hon.); P. and S., Balt., 1881	1885	1885
Rodman, J. C., Washington (Hon.); Bellevue Med. Coll., 1892	1892	1895
Swindell, Lewis H., Washington; Univ. of Pa., 1916	1916	1919
Tayloe, D. T., Washington (Hon.); Bellevue Med. Coll., 1885	1885	1885
Tayloe, D. T., Jr., Washington; Univ. of Pa., 1919	1919	1922
Windley, R. E., Washington; Grad. Univ. Md., 1903	....	1907
Winstead, E. G., Belhaven; Grad. Med. Coll. Va., 1929	1929	1930

BERTIE COUNTY SOCIETY

President:	....	....
Secretary: E. P. Norfleet, Roxobel; Va. Med. Coll., 1914	1914	1920
Castelloe, Cola, Windsor; Univ. of Pa., 1917	1917	1926
Evans, L. B., Windsor; Univ. Coll. of Med., 1900	1900	1907
Garris, Frank H., Lewiston; Jefferson Med. Coll., 1912,	1912	1918
Lyon, Henry Wise, Windsor; Univ. of Pa. Sch. of Med., 1918	1919	1920
Parker, Chas. M., Portsmouth, Va.; Emory Univ., 1929	1929	1929
Sawyer, Charles Judson, Windsor (Hon.); P. and S., Balt., 1895	1895	1897
Smith, Jos. Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: G. C. Singletary, Clarkton; Univ. of Pa. School of Med., 1917	1917	1918
Secretary: E. S. Clark, Clarkton; Med. Coll. of Va., 1914	1914	1915
Bennett, E. C., Elizabethtown; Med. Coll. of Va., 1926	1926	1927
Bridger, D. H., Bladenboro; Jeff. Med. Coll.	1922	1925
Bullard, G. F., Elizabethtown; N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Cromartie, R. S., Elizabethtown; N. C. Med. Coll., 1900	1900	1915
Hutchinson, S. S., Bladenboro; N. C., Med. Coll., 1911	1911	1917

BRUNSWICK COUNTY SOCIETY

President: Wm. R. Goley, Shallott; Univ. Coll. of Med., Richmond, 1901	1901	1904
Secretary:	....	....
Dickson, M. S., Longwood; Med. Coll. S. C., 1927	1927	1929

BUNCOMBE COUNTY SOCIETY

President: J. D. MacRae, Asheville; Univ. of Nashville, 1897	1899	1920
Secretary: M. S. Broun, Asheville; Columbia University Coll. of P. S., 1919	1922	1923
Adams, J. L., Asheville; Jeff. Med. Coll., 1910	1910	1913
Alexander, Geo., Asheville; Univ. of Louisville Med. Dept., 1913	1920	1921
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920	1921	1922
Ambler, Chas. P., Asheville (Hon.); West. Reserve Univ. School of Med., 1889	1890	1891
Archer, Isaac J., Black Mountain; Northwestern Univ. Med. Sch., 1896	1905	1907
Baier, Geo. F., Jr., W. Asheville; Halmemann Med. Coll., 1906	1920	1930
Baker, W. E., Arden; Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo., C., Asheville; Univ. of Md., 1912	1912	1912
Beall, L. G., Black Mountain; N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1912
Beers, David L., Asheville; Univ. Mich., 1925	1928	1929
Blumberg, Alfred, Oteen; Coll. Sch. Med. Univ. Colo., 1923	1928	1929
Bown, Herbert H., Asheville; Columbus Med. Coll., 1892	1917	1918
Briggs, Henry H., Asheville; Yale Univ. School of Med., 1897	1901	1903
Brookshire, Harley G., Asheville; N. C. Med. Coll., 1905	1905	1907
Brownson, Wm. C., Asheville (Hon.) Univ. of N. Y., 1878	1881	1885
Brownsberger, John F., Asheville; Coll. of Med., Evan. Los Angeles, 1925	1928	1929
Brown, Kermit E.; Jeff. Med., 1927	1927	1930

Buck, David M., Asheville; Med. Coll. of Va., 1925	1925	1927
Buckner, J. M., Swannanoa; Univ. N. C., 1909	1909	1912
Carr, Eugene M., Asheville; Johns Hopkins Univ., 1919	1926	1927
Cheesborough, Thomas P., Biltmore (Hon.); Univ. of N. Y., 1891	1891	1900
Clark, Harold S., Asheville; Univ. of Pa., 1922	1922	1924
Cocke, C. H., Asheville; Cornell Univ. 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville; Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. Sch., 1895	1909	1912
Cotten, Clyde E., Asheville (Hon); Univ. of Wooster, 1889	1901	1901
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Croom, G. H., Asheville, Box 1233; N. C. Med. Coll. 1909	1909	1916
Crow, S. L., Asheville; Emory Univ., 1925	1926	1927
Eckel, O. F., Asheville; Med. Coll., of S. C., 1906	1907	1909
Edwards, B. O., Asheville; N. C., Medical Coll., 1905	1905	1909
Edwards, C. P., Asheville; Tenn. Med. Coll., 1900	1903	1921
Elias, Lewis W., Asheville; Columbia Univ. Coll. of P. and S., 1903	1906	1907
Floyd, H. T., Oteen; Johns Hopkins Univ., 1923	1926	1927
Folsom, T. W., Asheville; Univ. of Pa., 1921	1921	1923
Fox, Robert Eugene, Asheville; Grad. Univ. of Pa	....	1929
Frazer, H. Thompson, Asheville; Columbia Univ. Coll. P. an S. N. Y., 1901	1908	1909
Freeman, Wm. T., Biltmore; Univ. of Ga., 1917	1927	1929
George, John C., Oteen, Miami Med., 1906	1925	1927
Godwin, G. C., Oteen; Med. Coll. Va., 1915	1915	1920
Grantham, Wm. L., Asheville; N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915	1916	1917
Hahn, Milton, Asheville; Johns Hopkins Univ., 1907	1926	1927
Harrison, H. H., Asheville; Jeff. Med. Coll., 1905	1905	1918
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917	1917	1927
Herbert, Wm. P., Asheville; Univ. of Va., 1907	1910	1911
Hollyday, W. M., Asheville; Univ. of Maryland, 1908	1914	1915
Huffines, T. R., Asheville; Indiana Univ. Med. Sch., 1919	1922	1923
Huston, Jno. Walter, Asheville; Rush Med. Coll., 1904	1912	1913
Ingersoll, Louise M., Asheville; Woman's Med. Coll., 1914	1925	1927
Ivey, R. R., U. S. P. H. S., Biltmore; Univ. of Ala., 1909	1921	1921
Jordan, Charles S., Asheville (Hon); Univ. of N. Y., 1890	1891	1899
King, Edward, Asheville; Harvard, 1917	1921	1922
Kutscher, G. W., Jr., Swannanoa; Univ. of Pittsburgh, 1923	1925	1926
Lindberg, O. S., Candler; Coll. of Med., Evangelists Los Angeles, Cal., 1923	1925	1928
Lord, Marjery J., Montreat; Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville; Univ. of Md., 1904	1912	1913

McCall, A. C., Asheville; Univ. of Md., 1910	1910	1912
McCracken, C. M., Fairview; N. C. Med. Coll., 1896	1896	1904
McRae, J. D., Jr., Asheville; Univ. of Pa. Med. School, 1927	1927	1929
Mears, George A., Asheville; Med. Coll. Syracuse Univ., 1924	1924	1927
Millander, Chas. W., Asheville; Tulane Univ., 1919	1921	1924
Montgomery, Kenneth E., Asheville; Univ. Louisville, 1917	1920	1920
Moore, Julian A., Asheville; Univ. of Pa., 1918	1918	1921
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1921
Morgan, G. A., Asheville; Univ. of Tenn., 1917	1920	1925
Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Norburn, R. L., Asheville; Vanderbilt Univ., 1925	1925	1927
Ogilvie, Hanson S., Asheville; Med. Coll. Va., 1909	1926	1927
Orr, Chas. C., Asheville; Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville; Jeff. Med. Coll., 1901	1901	1904
Parker, Geo. F., Asheville; Univ. of Pa., 1923	1924	1926
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, G. L., Black Mountain; Univ. Coll. of Med., Richmond, 1913	1913	1926
Reeves, A. F., Asheville; Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Asheville (Hon.); Univ. of N. Y., 1895	1895	1896
Richardson, F. H., Black Mountain; Cornell Univ. Med. Coll., 1906	1919	1920
Ringer, Paul H., Asheville; Columbia Univ. P. and S., N. Y., 1904	1906	1907
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Sevier, D. E., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville (Hon.); Balt. Med. Coll., 1891	1892	1893
Suggett, O. L., Asheville; Barnes Med. Coll., 1893	1928	1929
Sumner, Howard L., Asheville; Jeff. Med. Coll.	1926	1929
Tennett, G. S., Asheville (Hon.); N. C. Med. Coll., 1894	1894	1898
Terry, George H. B., Oteen; Jeff. Med. Coll., 1895	1925	1927
Terry, P. R., Asheville; George Washington Univ., 1907	1912	1913
Thompson, A. C., Asheville; Georgetown Univ., 1911	1921	1922
Wanstrom, Ruth, Asheville; Univ. of Mich., 1918	1920	1926
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Watkins, John A., Asheville; Tulane University, 1910	1925	1926
Weaver, H. B., Asheville (Hon.); Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville; Jeff. Med. Coll., 1898	1897	1915
White, R. A., Asheville; Univ. Cin. Coll. of Med., 1918	1920	1921
Whitehead, S. L., Asheville; Jefferson Med. Coll., 1921	1921	1929
Wiest, Paul F., Asheville; University of Md., 1921	1925	1925
Williams, L. L., Asheville; Med. Coll. of S. C., 1880	1924	1927
Willis, A. P., Candler; Univ. of N. C., 1904	1904	1919
Woodward, J. G., Asheville; Univ. of Pa., 1925	1925	1927
Young, J. G., Asheville; Univ. of Tenn., 1926	1926	1929

BURKE COUNTY SOCIETY

President: Allan McLean, Morganton..... ....
Secretary: Jas. W. Vernon, Morganton; Jeff. Med. Coll., 1909.. 1909 1913
Achard, Lucien, Morganton; R. Univ. of Naples (Italy)..... 1896 1929
Avery, E. S., Morganton; Univ. of Pa., 1928..... .... 1928 1930
Billings, G. M., Morganton; Tulane Univ. of La., 1919..... 1919 1920
Boyles, M. F., Valdese; N. C. Med. Coll. 1917..... 1917 1920
Kende, Tibor Norbert, Astoria, N. Y.; Royal Hungarian Univ., 1922..... 1927 1928
Kibler, W. H., Morganton; Univ. of Pa., 1914..... 1914 1918
Kirksey, Jas. J., Morganton; Univ. of Pa., 1921..... 1921 1923
Long, Benj. L., Glen Alpine; N. C. Med. Coll., 1913..... 1913 1914
Long, R. H., Morganton; Jeff. Med. Coll., 1916..... 1916 1923
McCampbell, John, Morganton (Hon.); Balt. Med. Coll., 1894.. 1895 1899
Phifer, Edward M., Morganton; N. C., Med. Coll., 1902..... 1902 1904
Riddle, J. B., Morganton; Vanderbilt Univ., 1898..... 1904 1904
Taylor, E. H. E., Morganton; Tulane Univ. La., 1924..... 1924 1925
Taylor, J. E., Morganton..... ....
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907..... 1907 1910

CABARRUS COUNTY SOCIETY

President: John A. Patterson, Concord; Univ. Coll. of Med., Richmond, 1911..... 1911 1912
Secretary: D. G. Caldwell, Concord; Univ. of Pa., 1923..... 1925 1925
Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912..... 1913 1915
Burleyson, L. N., Cabarrus; Univ. of Md., 1891..... 1891 1906
Burns, J. E., Concord; Med. Coll. of Va., 1923..... 1923 1927
Flowe, R. Frank, Kannapolis; N. C. Med. Coll., 1913..... 1914 1915
Gouger, Geo. J., Concord (Hon.); Univ. of Md., 1891..... 1891 1899
Hartsell, J. A., Concord; Jeff. Med. Coll., 1912..... 1914 1916
Howard, J. R., Concord; Med. Coll. Va., 1924..... 1924 1925
King,, Richard M., Concord; Jeff. Med. Coll., 1903..... 1903 1907
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915..... 1915 1916
MacFayden, Paul R., Concord; Univ. Coll. of Med., Richmond, 1901..... 1901 1904
Misenheimer, E. A., Concord; Univ. of Md., 1926..... 1927 1928
Nolan, J. O., Kannapolis; Jeff. Med. Coll., 1921..... 1921 1922
Pemberton, Wm. D., Concord (Hon.); Univ. of Md., 1887..... 1887 1887
Rankin, R. B., Concord; Tulane Univ. of La., 1917..... 1920 1922
Reed, John F., Concord; Univ. of N. Y., 1893..... 1907 1912
Robinson, E. E., Concord; Med. Coll. of Va., 1927..... 1927 1929
Smoot, J. E., Concord; Btl. Med. Coll., 1893..... 1894 1902
Sossoman, J. C., Midland; N. C. Med. Coll., 1915..... 1917 1918
Whicker, Guy L., Kannapolis; Univ. of Md., 1926..... 1926 1928
Widenhouse, M. A., Concord; Univ. of Cinn., 1925..... 1926 1927
Yow, I. A., Concord; N. C. Med. Coll., 1906..... 1906 1910

CALDWELL COUNTY SOCIETY

President: J. D. Rudisill, Lenoir; Univ. of Md., 1922..... 1922 1923
Secretary: W. P. Richardson, Lenoir; Grad. Med. Coll. of Va., 1928 ..... 1928 1929

Coffey, Lawrence H., Lenoir; Va. Med. Coll., 1906	1906	1913
Corpening, O. J., Granite Falls; Univ. Coll. of Med., Va. 1906	1906	1907
Goodman, A. B., Lenoir; N. C. Med. Coll., 1898	1897	1910
Hamer, Douglas, Jr., Lenoir; Grad. Med. Coll. of S. C.	1927	1929
Hedrick, Clyde R., Lenoir; Georgetown Med. Sch., 1925	1925	1926
Hickman, M. T., Hudson; Univ. of Va., 1909	1909	1910
Houck, Albert, Lenoir (Hon.); P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Winter Pk., Fla., (Hon.); Jeff. Med. Coll., 1885	1885	1894
McNairy, Caroline, Lenoir; Woman's Med. Coll., Pa., 1917	1917	1919
Petrie, Rob't. Wm., Lenoir; Univ. of Md., 1903	1903	1903
Russell, C. R., Granite Falls; Univ. Coll. of Med., Richmond, 1909	1909	1918
White, W. M., Lenoir; Atlanta P. and S., 1899	1899	1905
Wilson, Clarence L., Lenoir; U. S. Grant Univ., 1903	1903	1905

CARTERET COUNTY SOCIETY

President: C. S. Maxwell, Beaufort; Univ. of the South, Sewanee, 1900	1899	1904
Secretary: Francis Edward Hyde, Beaufort; West. Res. Univ., 1920	1925	1926
Bonner, K. P. B., Morehead City; Med. Coll. of Va., 1905	1905	1905
Chadwick, W. S., Beaufort; Grad. Univ. of Va., 1928	1928	1930
Davis, George, Beaufort; Kentucky School of Med., 1894	1896	1904
Ferebee, C. G., Morehead City; Med. Coll. of Va., 1902	1904	1904
Johnson, Otis H., Morehead City	....	....
Mason, C. N., Harlowe	....	....
Mason, Manly, Newport; Tulane University, 1924	1924	1925
Royal, Ben F., Morehead City; Jeff. Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City; Med. Coll. Va., 1913	1915	1922
Whitehurst, E. B., Beaufort; Med. Coll. Va., 1915	1917	1920

CASWELL COUNTY SOCIETY—(See Alamance-Caswell)

CATAWBA COUNTY SOCIETY

President: H. C. Menzies, Hickory (Hon.); N. C. Med. Coll., 1894	1894	1899
Secretary: T. C. Blackburn, Hickory; Balt. Med. Coll., 1896	1896	1909
Craft, C. C., Hickory; Grad. Geo. Wash. Univ., 1909	1909	1930
Flippin, J. M., Hickory; Coll. P. and S. Md., 1884	1893*	1926
Fresh, W. M., Hickory	....	1927
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921	1921	1923
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Menzies, H. H., Hickory; Med. Coll. Va., Richmond 1923	1923	1926
Kluttz, A. F., Maiden; Jeff. Med. Coll., 1917	1917	1920
Norman, J. S., Hickory; P. and S. Balt., 1909	1911	1920
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Price, K. A., Hickory; Univ. of Va., 1907	1907	1909
Shuford, Jacob H., Hickory; Univ. of Mich., 1901	1902	1902
Speas, W. P., Hickory; Med. Coll. of Va., 1912	1911	1912

CHATHAM COUNTY SOCIETY

President: J. D. Edwards, Siler City (Hon.); Louisville Med. Coll., 1887	....	1894

Secretary: Joseph L. Johnson, Bonlee; Grad. Jeff., 1926	1926	1930
Chapin, Wm. Burdette, Pittsboro; Univ. of N. C. 1909	1909	1910
Denson, H. A., Bennett; Central Coll. P. and S., Indianapolis, 1887	1913	1913
Fields, Robert M., Goldston	....	1911
Gyles, Ronald C., Siler City; Jeff. Med. Coll., 1917	1922	1924
McBane, T. W., Pittsboro	....	....
Palmer, R. W., Gulf; Louisville Med. Coll., 1890	....	1891
Thomas, W. C., Siler City; Va. Med. Coll., 1917	1917	1920

CHEROKEE COUNTY SOCIETY

President: B. G. Webb, Andrews; Louisville Med. Coll., 1885	1885	1885
Secretary: Edw. E. Adams, Murphy; Jeff. Med. Coll., 1923	1923	1924
Adams, N. B., Murphy; Tenn. Med. Coll., 1896	1909	1909
Heighway, S. C., Murphy; Med. Coll. of Ohio, 1885	1904	1898
Herbert, Fred L., Andrews; Tenn. Med. Coll., 1904	1912	1912
Hill, J. N., Murphy; Univ. of Louisville, 1909	1909	1909
Morrow, Wm. C., Andrews; Atlanta Sch. of Med., 1909	1909	1909
Newman, L. B., Andrews; Univ. of Tenn., 1923	1926	1927
Tidwell, J. E., Andrews; Chattanooga Med. Coll., 1903	1909	1915
Young, G. McD., Postell; Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

President:	....	....
Secretary:	....	....
Cox, Thomas A., Hertford; Univ. of Md., 1892	1907	1918
Davenport, C. A., Hertford; Univ. of Md., 1924	1924	1926
Brinn, T. P., Hertford; Univ. of Pa., 1923	1923	1927
Hoggard, Wm. Alden, Belvidere; Univ. Coll. Med., Va., 1907; Vanderbilt Univ., 1914	1907	1910
Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1918
Williams, L. P., Edenton; Bellevue Med. Coll., 1918	1919	1921
Warren, John W., Edenton; Univ. Coll. Med., Richmond, 1907	1926	1921

CLEVELAND COUNTY SOCIETY

President: J. W. Harbison, Shelby; Johns Hopkins, 1919	1919	1924
Secretary: Sam M. Schenk, Shelby; Univ. of Pa., 1923	1923	1926
Aydlette, Jos. P., Earl; Kentucky University, 1901	1903	1903
Bridges, D. T., Lattimore; Emory Univ., 1926	....	1927
Ellis, R. C., Shelby (Hon.); Balt. Univ. Med. School, 1886	1889*	1891
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; P. and S., Balt., 1920	1920	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911	1911	1915
Hamrick, T. G., Shelby; P. and S., Balt., 1895	1895	1904
Houser, E. A., Shelby; Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, F. H., Fallston; Univ. of Med., 1913	1915	1920
Lattimore, E. B., Shelby; Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence V., Lattimore; Emory Univ. School of Med., 1894	1897	1904
Lockey, W. J., Fallston; Va. Medical College, 1928	1928	1929

Matthews, B. B., Shelby; Med. Coll. of S. C.	1927	1929
Mitchell, W. F., Shelby; Univ. of Md., 1889	1900	1904
Moore, D. F., Shelby; Jeff. Med. Coll., 1925	1925	1927
Oates, George, Grover; Univ. of Louisville, 1894	1902	1904
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926	1927	1929
Royster, S. S., Shelby; Tenn. Med. Coll., 1891	1896	1904
Scruggs, F. B.; Jeff. Med. Coll., 1919	1919	1922
Sherrill, H. R., Lawndale; Univ. of Tenn., 1926	1926	1927
Stokes, P. B., Kings Mtn.; Med. Coll. of Va., 1917	1917	1920
Powell, Jesse A., Edenton; Coll. of Phys. & Surg., Balt., 1907	1908	1909
Wood, J. W., Boiling Springs; Louisville Med. Coll., 1892	1901*	1900

COLUMBUS COUNTY SOCIETY

President: W. H. Crowell, Whiteville; Univ. of Md., 1895	1895	1908
Secretary: Floyd Johnson, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Whiteville; N. C. Med. Coll., 1907	1907	1909
Barefoot, Graham B., Chadbourn; Jeff. Med. Coll., 1923	1923	1924
Cox, G. S., Tabor; N. C. Med. Coll., 1911	1911	1914
Elliott, G. D., Fair Bluff; Univ. of Pa., 1923	1923	1926
Floyd, A. J., Chadbourn; Med. Coll. of S. C., 1927	1927	1929
Floyd, L. D., Cerro Gordo; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton; Va. Med. Coll., 1919	1920	1922
Maxwell, H. B., Whiteville; Univ. of Md., 1902	1902	1902
Moore, T. V., Acme; Balt. Med. Coll., 1901	1901	1911
Rozier, R. G., Cerro Gordo; Univ. of Md., 1899	1899	1904
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915
Smith, W. F., Chadbourn; N. C. Med. Coll., 1904	1904	1905
Whitaker, R. B., Whiteville; Univ. Coll. of Med., Richmond, 1912	1912	1913
Williams, Wm. Norman, Tabor; Med. Coll. of Va., 1924	1924	1925

CRAVEN COUNTY SOCIETY

President: E. L. Bender, New Bern; Med. Coll. Va., 1916	1916	1925
Secretary: D. E. Ford, New Bern; Univ. of Mich., 1908	1925	1924
Ball, M. W., New Bern; Atlanta Sch. of Med., 1909	1909	1913
Barker, Christopher S., New Bern; Jeff. Med. Coll., 1909	1909	1924
Daniels, R. L., New Bern; Med. Coll. of Va., 1912	1912	1919
Duffy, R. N., New Bern; Johns Hopkins, 1906	1907	1908
Duguid, Jos. W., Dover; N. C. Med. Coll., 1905	1905	1912
Gibbs, N. M., New Bern; Univ. of Md. and Coll. P. and S., Balt., 1896	1895	1897
Jones, R. Duval, New Bern; Univ. of Md., 1896	1897	1897
Latham, Joseph R., New Bern; Jeff. Med. Coll., 1917	1917	1923
Patterson, Joseph F., New Bern; Jeff. Med. Coll., 1906	1906	1906
Pollock, Raymond, New Bern; Jefferson Med. Coll., 1897	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923
Woodard, E. D., New Bern; Loyola Univ.	1920	1921

CUMBERLAND COUNTY SOCIETY

President: J. H. McLeod, Fayetteville	....	....
Secretary: O. L. McFadyen, Fayetteville; N. C. Med. Coll., 1912	1912	1912

Allgood, R. A., Fayetteville; Univ. of Md. and Coll. of P. and S., Balt., 1912	1915	1917
Averitt, K. G., Cedar Creek; Balt. Med. Coll., 1893	1893	1902
Baker, David, Fort Bragg; Barnes Medical Coll., St. Louis, 1893	....	1928
Boyer, Maj. Gouveneur H., Fort Bragg; Amherst Coll., 1903	....	1927
Bullock, Thomas C., Autryville; P. & S., Balt., 1885	1885	1905
Currie, D. S., Parkton; N. C. Med. Coll., 1906	1906	1907
Gainey, John W., Fayetteville; Jeff. Med. Coll., 1917	1917	1921
Chester, P. J., Fayetteville; N. C. Med. Coll., 1913	1913	1920
Highsmith, J. D., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927	1927	1929
Highsmith, Seavy, Fayetteville; Univ. Coll. of Med., Richmond, 1901	1901	1902
Jordan, Wm. S., Fayetteville; Univ. of N. C., 1906	1906	1907
Kirksey, W. A., Hope Mills; Washington Univ., 1921	1921	1924
Lilly, James M., Fayetteville; Univ. Coll. of Med., Richmond, 1903	1903	1904
McKay, W. P., Fayetteville; Tulane Univ., 1916	1916	1921
Olive, P. W., Fayetteville; P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville; Jeff. Med. Coll., 1910	1910	1912
Powell, Wm. H., Jr., Fayetteville; Med. Coll. Va., 1927	1927	1929
Rainey, W. T., Fayetteville; Univ. Coll. of Med., Richmond, 1913	1913	1916
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923	1923	1924
Shaw, J. A., Fayetteville; Univ. Pa., 1923	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921
Williams, Lester L., Fayetteville; Md. Med. Coll., 1913	1913	1916

CURRITUCK COUNTY SOCIETY

President:	....	....
Secretary:	....	....
Griggs, W. T., Poplar Branch (Hon.); Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President: Robert U. Zimmerman, Lexington, Rt. 4; N. C. Med. Coll., 1901	1901	1904
Secretary: Grover C. Gambrell, Lexington; Univ. of Ga., 1912	1923	1924
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Farrington, R. K., Thomasville; Univ. Cinn., 1925	1925	1927
Hunt, W. Bryce, Lexington; Univ. of Md., 1923	1923	1924
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913	1913	1920
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922	1922	1924
Mock, Frank Lowe, Lexington, Rt. 3; N. C. Med. Coll., 1908	1908	1911
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914	1914	1917
Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Smith, William Gordon, Thomasville; Tulane Univ., 1927	1927	1928
Sowers, Jacob L., Lexington; Univ. of Md., 1921	1921	1924
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1912
Vestal, Willis J., Lexington (Hon.); P. and S., Balt., 1883	1889*	1893
Yokeley, R. V., Thomasville; N. C. Med. Coll., 1911	1911	1912

DAVIE COUNTY SOCIETY

President: Martin, W. C., Mocksville; P. and S., Balt., 1888....	1888	1904
Secretary: Byerly, A. B., Cooleemee; Univ. College of Med., Richmond, 1896.....	1896	1904
Harding, S. A., Mocksville; N. C. Med. Coll., 1910.....	1910	1913
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920.....	1920	1921
Rodwell, Jno. W., Mocksville (Hon.); P. and S., Balt., 1895....	1895	1896

DUPLIN COUNTY SOCIETY

President: J. W. Farrior, Warsaw; Univ. of Pa., 1912.....	1913	1917
Secretary: J. W. Straughan, Warsaw; Med. Coll. of Va., 1924	1924	1925
Carr, Ransom Lee, Rose Hill; Balt. Med. Coll., 1907.....	1908	1909
Carroll, Jno. William, Wallace; Univ. of Maryland, 1903.....	1903	1903
Maxwell, J. F., Pink Hill.....	1889*	1917
Morton, J. X., Faison; N. C. Med. Coll., 1915.....	1915	1922
Landen, Jefferson F., Chinquapin; Univ. Coll. of Med., Va., 1905	1905	1907
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912.....	1913	1916
Robinson, J. D., Wallace; Univ. of Md., 1915.....	1915	1917
Williams, Jas. M., Warsaw; Univ. of Md., 1902.....	1902	1902
Williams, R. C., Wallace; Univ. of Md., 1912.....	1915	1916

DURHAM-ORANGE COUNTIES SOCIETY

President: H. M. Sweaney, Durham; Univ. of Pa., 1919.....	1919	1920
Secretary: D. R. Perry, Durham; Jeff. Med. Coll., 1919.....	1919	1922
Abernethy, E. A., Chapel Hill; Univ. Coll. of Med., Richmond, 1901; Geo. Wash. Univ., 1903.....	1901	1914
Adams, C. A., Durham; P. and S., Balt., 1892.....	1892	1901
Adkins, M. T., Durham; Johns Hopkins, 1907.....	1915	1916
Anderson, W. B., Durham; Johns Hopkins, 1924.....	1927	1927
Bass, H. H., Durham (Hon.); Univ. Coll. of Med., 1899.....	1899	1900
Baynes, R. H., Durham; Univ. of Md., 1914.....	1914	1920
Bitting, Numa D., Durham; Jeff. Med. Coll., 1907.....	1907	1909
Boddie, Needham P., Durham (Hon.); P. and S., Balt., 1883..	1883	1883
Booker, Lyle S., Durham; Va. Univ. Med. Coll., 1908.....	1910	1911
Boone, W. H., Durham; N. C. Med. Coll., 1902.....	1902	1910
Boone, W. W., Durham; Jeff. Med. Coll., 1923.....	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924.....	1924	1926
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919.....	1919	1923
Brooks, B. U., Durham; Univ. of Md., 1905.....	1905	1907
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897.....	1914	1915
Bowling, Edwin Holt, Durham; P. and S., Balt., 1891.....	1890	1908
Campbell, A. S., Durham; Chicago Coll. Med. and Surg., 1917...	1923	1924
Chiles, George G., Durham; Med. Coll. of Va., 1926.....	1928	1928
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918.....	1919	1920
Darden, O. B., Westbrook Sanatorium, Richmond Va., Med. Coll. of Va., 1918.....	1920	1920
Davison, Wilburt C., Durham; Johns Hopkins, 1917.....	1927	1927
Fassett, Burton W., Durham; Balt. Med. Coll., 1898.....	1899	1909
Felts, Robert L., Durham; Univ. of Md., 1898.....	1899	1909
Gorham, H. J., Durham; Univ. of Md., 1926.....	1926	1927

Goudge, Mabel E., West Durham; Ohio State Univ., 1922.....	1925	1927
Hardee, W. P., Durham; Jeff. Med. Coll., 1912.....	1912	1924
Hayes, R. B., Hillsboro; Univ. of Md., 1906.....	1910	1917
Haywood, C. L., Jr., Durham; Harvard, 1927.....	1929	1930
Hicks, Calvin S., Durham; Univ. of Md., 1904.....	1904	1904
Holloway, Joseph C., Durham; Tulane Univ., 1927.....	1927	1929
Holloway, Robert Lee, W. Durham (Hon.); Med. Coll. of Va., 1893.....	1893	1901
Johnson, N. M., Durham (Hon.); Wash. Univ. Sch. of Med., 1877	1889	1879
Kerns, T. C., Durham; Univ. of Pa., 1911.....	1911	1912
Lloyd, B. B., Carrboro; Univ. of N. C., 1909.....	1909	1914
McCutcheon, W. B., Durham; Med. Coll. of Va., 1921.....	1921	1924
MacNider, Wm. deB., Chapel Hill; Univ. of N. C., 1903.....	1903	1903
McPherson, S. D., Durham; Univ. of Md., 1903.....	1903	1912
Mangum, C. S., Durham; Jeff. Med. Coll., 1894.....	1896	1898
Mann, Thos A., Durham; Univ. of Md., 1903.....	1903	1924
Manning, I. H. Chapel Hill (Hon.); Long Island Coll. Hosp., N. Y., 1897.....	1899	1901
Manning, Jno. M., Durham (Hon.); Bellevue Med. Coll., 1882	1884	1884
Markham, Blackwell, Durham; Harvard Med. Coll., 1922.....	1922	1925
Montague, S. J., Durham; Bellevue Hosp. Med. Coll., 1872.....	1880	1922
Nichols, Rhodes E., Durham (Hon.), Rt. 8; Va. Med. Coll., Richmond, 1890.....	1890	1904
Patrick, J. E.; Bahama; Univ. Coll. of Med., Va., 1900.....	1900	1917
Powell, Albert H., Durham; Univ. of Ga., 1924.....	1925	1925
Riggsbee, A. E., Durham; Univ. of N. C., 1909.....	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909.....	1909	1912
Robertson, E. M., Durham; Tulane Univ., 1912.....	1912	1913
Roberts, B. W., Durham; Univ. of Md., 1924.....	1924	1927
Ross, George H., Durham; Univ. Tenn., 1899.....	1899	1904
Ross, Robert A., Durham; Univ. of Pa., 1922.....	1922	1925
Schuler, J. E., East Durham; Med. Coll. of Va., 1914.....	1920	1922
Smith, Annie T., Durham; Univ. of Ill., 1923.....	1925	1926
Speed, J. A., Durham; Jeff. Med. Coll., 1914.....	1914	1916
Spikes, N. O., Durham; Jeff. Med. Coll., 1924.....	1924	1927
Stanford, Lois Foote, Durham; Univ. of Pa., 1921.....	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919.....	1919	1923
Stoner, I J., West Durham; Memphis Med. Coll., 1898.....	1921	1922
Strowd, W. A., Durham; Univ. of N. C., 1909.....	1909	1926
Toy, Calvert R., Chapel Hill; Univ. of Pa., 1923.....	1923	1926
Tyler, E. R., Durham; Jeff. Med. Coll., 1923.....	1923	1927
Upchurch, R. W., Durham; Univ. of Va., 1925.....	1925	1927
Watkins, G. T., Durham; Jeff. Med Coll., 1915.....	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923.....	1923	1925

EDGECOMBE COUNTY SOCIETY

President: Julian Meredith Baker, Tarboro (Hon.); Univ. of Md., 1879.....	1879	1879
Secretary: R. E. Broadway, Tarboro; Med. Coll. of S. C., 1911..	1923	1926
Barber, Y. M., Macclesfield; Univ. of Md., 1914.....	1917	1918
Bass, Spencer P.. Tarboro; Univ. of Va., 1906.....	1907	1909
Crane, C. W.....	....	....
DeLoatch, M. W., Tarboro.....	....	1930

Green, Wm. W., Tarboro; Univ. N. C., 1908	1908	1910
Harrell, Samuel N., Tarboro; Univ. of Md., 1897	1897	1904
House, W. O.	....	....
Norfleet, A. C., Tarboro	....	1927
Pearson, H. O., Pinetops; Med. Coll. of Va., 1926	1927	1928
Raby, J. G., Tarboro; Univ. Coll of Med., 1911	1911	1912
Wooten, Amos Monroe, Pinetops; Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President: T. C. Redfern, Winston-Salem; L. I. Med. Coll. Hosp., 1916	1921	1921
Secretary: E. V. Benbow, Winston-Salem; Jeff., 1925	1925	1927
Ader, O. L., Walkertown; Univ. of Pa., 1925	1925	1927
Belton, J. F., Winston-Salem; Univ. of Pa., 1914	1914	1916
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911	1911	1914
Brown, F. B., Winston-Salem; Grad. Univ. of Ga., 1926	1926	1930
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915	1920	1921
Bynum, John, Winston-Salem (Hon.); Univ. of N. Y., 1892	1892	1893
Carlton, Romolus L., Winston-Salem; Univ. of Md., 1906	1906	1908
Casstevens, J. C., Clemmons; Va. Med. Coll., 1926	1926	1927
Cooke, G. C., Winston-Salem; Univ. of Md., 1919	1919	1920
Couch, V. F., Winston-Salem; P. and S., New York, 1911	1911	1919
Craig, S. D., Winston-Salem; Tulane Univ., 1908	1911	1912
Cook, J. L., Winston-Salem; Med. Coll. Pa., 1925	1925	1927
Dalton, D. N., Winston-Salem (Hon.); Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem; N. C. Med. Coll., 1904	1904	1905
Davis, Thos. W., Winston-Salem (Hon.); S. C. Med. Coll., 1898	1899	1889
Daugherty, J. E., Brooklyn, N. Y.; Barnes Med. Co., 1902	1920	1920
DeLaney, C. O., Winston-Salem; Jefferson, 1919	1919	1926
Edwards, A. D., Winston-Salem; Univ. of Md., 1903	1904	1905
Eskew, D. C., Winston-Salem; Univ. of Va., 1924	1924	1928
Garvey, R. R., Winston-Salem; N. C. Med. Coll., 1915	1915	1919
Gray, Eugene Price, Winston-Salem; Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Hanes, F. M., Winston-Salem; Johns Hopkins, 1908	1916	1917
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916	1916	1917
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1916
Izlar, H. L., Winston-Salem; Med. Coll. S. C., 1915	1916	1916
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverly N., Winston-Salem; Med. Coll., of Va., 1915	1915	1921
Kapp, Henry H., Winston-Salem; Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., Richmond, 1911	1911	1914
Kerr, Jas. Edwin, Winston-Salem (Hon.); Univ. of Md., 1897	1898	1898
Kirby, W. L., Winston-Salem; Grad. Vanderbilt, 1925	1926	1930
Lassiter, V. C., Winston-Salem	....	....
Lawrence, Chas. S., Winston-Salem; Univ. of Ga., 1908	1908	1911
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem; Univ. of Pa., 1902	1904	1904
Long, Vann, McKee, Winston-Salem; N. C. Med. Coll., 1906	1906	1911
Wiggins, J. C., Winston-Salem; Univ. Pa., 1910	1910	1911

Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Va. Med. Coll., 1911	1914	1916
Padison, Jno. Robt., Kernersville; Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem; P. and S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem; Va. Med. Coll., 1904	1910	1917
Pfohl, Samuel F., Winston-Salem (Hon.); Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923	1923	1925
Poole, C. G., Winston-Salem; Tulane, 1924	1924	1927
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918	1920	1920
Salmons, L. R., Winston-Salem; N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem; Univ. of Ill. Med. Dept., 1904	1911	1912
Schaub, O. P., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Simmons, R. R., Winston-Salem; Va. Med. Coll., 1917	1923	1924
Slate, John S., Winston-Salem; Univ. Coll. Med., Richmond, Va., 1900	1899	1920
Spainhour, Ellis H., Winston-Salem (Hon.); Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Rt. 2, Winston-Salem; Univ. of Md., 1911	1913	1924
Spencer, Wm. O., Winston-Salem (Hon.); Jeff. Med. Coll., 1891	1891	1894
Spicer, Richard W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1916
Sprunt, W. H., Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Street, C. A., Winston-Salem; Harvard, 1918	1918	1925
Strickland, Edward F., Winston-Salem (Hon.); Univ. of New York, 1887	1887	1893
Thompson, Edg. S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
*Wright, O. E., Winston-Salem; Emory Univ., 1924	1924	1928
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913	1913	1916
Wylie, W. DeK., Winston-Salem; Univ. of Va., 1924	1926	1928
Yoder, Paul A., Winston-Salem; Univ. Pa., 1923	1923	1925

FRANKLIN COUNTY SOCIETY

President:	....	....
Secretary: R. B. Henderson, Franklinton; Univ. of Md., 1884	1884	1904
Burt, S. P., Louisburg; P. and S., Balt., 1896	1896	1904
Johnson, B. C., Bunn; Univ. of N. C., 1909	1909	1910
Johnson, Harry H., Louisburg; Col. of P. and S., Balt., 1915	1919	1919
Newell, J. O., Louisburg; P. and S., Balt., 1910	1910	1912
Perry, A. H., Wood; Univ. of Md. and P. and S., Balt., 1924	1924	1925
Perry, H. G., Louisburg; P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville; Jefferson Med. Coll., 1915	1915	1922
Winston, A. R., Franklinton; Bellevue Med. Coll., 1899	1899	1900
Yarborough, R. F., Louisburg (Hon.); Geo. Wash. Univ., 1898	1899	1899

GASTON COUNTY SOCIETY

President: W. M. Jones, Gastonia	....	....
Secretary: R. B. Groves, Lowell; Med. Coll. of Va., 1924	1924	1924
Anderson, James A., Gastonia; Univ. of Georgia, 1904	1909	1909
Anders, McT. G., Gastonia; Md. Med. Coll., 1901	1902	1902
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911	1911	1911
Adams, Charles E., Gastonia; Univ. of Md., 1897	1885	1885
Belk, Geo. W., Gastonia; Atlanta School of Med., 1913	1918	1924
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915	1920	1921
Bradford, B. M., Cherryville; N. C. Med. Col., 1915	1913	1923
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1919	1920
Clinton, Roland S., Gastonia; Univ. of Md., 1914	1914	1920
Eddleman, Hall M., Gastonia (Hon.); College Phys. and Surg., Balt.	1889	1904
Garrison, D. A., Gastonia (Hon.); Louisville Med. Coll., 1896	1896	1900
Glenn, Lucius N., Gastonia; Univ. of Md., 1897	1897	1904
Hemmingway, J. D., Gastonia; N. C. Med. Coll., 1915	1917	1917
Hood, J. Sidney, Gastonia; Jeff. Med. Coll., 1907	1907	1910
Howser, Forest M., Cherryville; Grad. Univ. of Pa., 1928	1929	1930
Hunter, W. B., Cramerton; Univ. of Pa., 1911	1911	1920
Johnson, R. Lee, Gastonia; Jefferson, 1911	1911	1918
Lyday, C. E., Gastonia; Atlanta S. of Med., 1910	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McChesney, W. W., Gastonia; Med. Coll. Va., 1915	1926	1927
McConnell, H. R., Gastonia	....	....
Miller, R. C., Gastonia; N. C. Med. Coll., 1909	1918	1919
Miller, Oscar L., Gastonia; Atlanta Coll. of P. & S., 1912	1921	1922
Parks, W. B., Gastonia; Univ. of Md., 1924	1924	1927
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Pressly, J. M., Belmont; N. C. Med. Coll., 1915	1915	1920
Pugh, Charles H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia; Tulane Univ., 1900	1899	1904
Reid, James W., Lowell; Jefferson, 1908	1908	1910
Rhyne, Robert Edgar, Gastonia; N. C. Med. Coll., 1907	1907	1908
Roberts, W. N., Gastonia; Tufts, 1925	....	1929
Scruggs, W. H., Gastonia; Univ. of Md., 1913	1915	1917
Swann, Jos. F., Gastonia; P. and S., Balt., 1896	1896	1905
Wilkins, Samuel A., Dallas; Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

President:	....	....
Secretary:	....	....
Blanchard, T. W., Hobbsville; Med. Coll. of Va., 1911	1911	1919
Carter, Thomas L., Gatesville; Med. Coll. of Va., 1917	1917	1928

GRANVILLE COUNTY SOCIETY

President: Wm. N. Thomas, Oxford; Va. Med. Coll., 1911	1911	1914
Secretary: R. W. Taylor, Oxford; Tulane Univ., 1926	1926	1928
Bradsher, J. S., Stovall; Univ. of Va., 1925	1925	1927
Daniel, N. C., Oxford; N. C. Med. Coll., 1895	1895	1902

Elliott, J. C., Oxford; Univ. Md., 1926	1926	1928
Fitch, W. E., Bedford Springs, Pa.	1891	1927
Hays, B. K., Oxford (Hon.); Univ. Coll. of Med. Va., 1894	1894	1897
Morris, Joseph A., Oxford (Hon.); Vanderbilt Univ., 1890	1893	1899
Noblin, Roy L., Oxford; Med. Coll. Va., 1924	1924	1924
Sikes, G. T., Youngsville (Hon.); Univ. of Md., 1883	1884	1884
Taylor, Wm. L., Oxford; Univ. of Va., 1900	1901	1901
Thompson, Joseph W., Creedmoor, Ky. Univ. Louisville, 1904	1907	1912
Watkins, Geo. S., Oxford; Univ. Coll. of Med. Va., 1900	1900	1908

GREENE COUNTY SOCIETY

President: Wm. W. Whittington, Snow Hill; Louisville Med. Coll., 1895	1895	1902
Secretary: W. E. Dawson, Hookerton; Jefferson, 1920	1920	1922
Carroll, F. W., Hookerton; Med. Coll. Va., 1925	1926	1927
Harper, J. H., Snow Hill; Jefferson, 1905	1906	1907
Murphy, W. B., Snow Hill; Univ. Coll. of Med., Va., 1903	1903	1905

GUILFORD COUNTY SOCIETY

President: F. A. Sharpe, Greensboro; Univ. of Pa., 1916	1916	1920
Secretary: Arthur D. Ownbey, Greensboro; Med. Coll. Va., 1920	1925	1927
Ashworth, W. C., Greensboro (Hon.); P. and S., Balt., 1892	1892	1894
Austin, J. W., High Point; Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlett, H. T., Greensboro; Univ. of Va., 1894	1895	1907
Bailey, C. W., Greensboro	....	....
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Banner, Chas. W., Greensboro; Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.); P. and S., Balt., 1884	1884	1890
Baylis, E. Katherine, Greensboro; Woman's Coll. of Pa., 1926	1927	1928
Beall, Wm. P., Greensboro (Hon.); Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro; Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro; Coll. of P. and S., Balt., 1884	1884	1920
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1921
Bowman, H. P., Greensboro; Univ. of Tenn., 1894	1894	1905
Brockmann, Harry L., High Point; Univ. of Pa., 1917	1917	1921
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914	1914	1920
Burress, B. A., High Point; Louisville Hospital Med. Coll., 1908	1922	1924
Burrus, John T., High Point (Hon.); Univ. of Md., 1900; Grant Univ., 1902; Davidson College, 1898	1898	1898
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Coe, Samuel S., High Point; Univ. Coll. of Med., Va., 1911	1912	1913
Davis, P. B., High Point; Jefferson, 1926	1926	....
Davis, R. B., Greensboro; Med. Coll. of Va., Richmond, 1915	1916	1917
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro; Univ. of Md., 1906	1907	1908
Dick, Julius Vance, Gibsonville; Univ. of N. C., 1907	1907	1908

Dyer, John W., High Point; Univ. of Louisville, 1916	1921	1925
Edwards, V. E., Greensboro; Univ. of Md., 1913	1913	1913
Ferneyhough, W. T., Greensboro; W. of M., 1916	1926	1927
Flagge, Philip W., High Point; Wash. Univ., St. Louis, 1902	1905	1919
Fortune, Alex. F., Greensboro; Univ. Coll. of Med., Va., 1900	1900	1904
Fox, N. A., Guilford College; Univ. of Pa., 1924	1924	1926
Fryar, C. H., Oak Ridge; Med. Coll. of Va	1919	1928
Gaw, Lois B., Greensboro; Women's Med. Coll., Balt., 1907	1907	1924
Gilmore, C. M., Greensboro; Med. Coll. of Va., 1925	1925	1926
Glascock, Joy H., Greensboro; Women's Med. Coll. of Balt., 1896	1896	1907
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of New York, Infirmary, 1892	1894	1896
Gordon, Faith F., Greensboro	....	1930
Grayson, C. S., High Point; Geo. Wash. Univ., 1906	1907	1908
Gregg, A. D., Liberty; Med. Coll. of S. C., 1913	1927	1928
Groome, J. G., High Point; Univ. of Ohio, 1924	1924	1925
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrison, Edmund, Greensboro (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Johns Hopkins Medical School, 1926	1926	1928
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Herring, R. A., Greensboro; Tulane, 1905	1923	1924
Hiatt, H. B., High Point; Univ. of Md., 1907	1907	1910
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Holt, W. T., McLeansville (Hon.); Univ. of Tenn., 1890	....	1896
Hudson, C. C., Greensboro; Univ. Coll. of Med. of Va., 1910	1918	1924
Jackson, Walter Leo., High Point; N. C. Med. Coll., 1911	1911	1913
Jarboe, Parron, Greensboro; Georgetown Univ., 1905	1906	1907
Jennings, C. W., Greensboro; Med. Coll. of Va., 1916	1916	1926
Johnson, Harry L., Greensboro; Univ. of Cinn., 1924	1924	1927
Jones, Wm. M., Greensboro; Univ. of Md., 1903	1903	1903
Jordan, S. R., Pleasant Garden; Med. Coll. of Va., 1899	1918	1928
Julian, Charles A., Greensboro (Hon.); Louisville Med. Coll., 1888	1891	1892
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., Greensboro (Hon.); Balt. Med. Coll., 1898	1898	1898
Long, E. F., High Point; Med. Coll. of Va., 1909	1909	1912
Lyday, R. O., Greensboro; Univ. of Pa., 1920	1920	1927
Lyon, B. R., Greensboro; Columbia Univ., 1915	1920	1920
McAnally, James McG., High Point; Univ. of Pa., 1927	1927	1927
McAnally, Wm. J., High Point (Hon.); Balt. Med. Coll., 1897	1896	1899
McCain, Wm. R., High Point; Univ. of Md., 1897	1898	1898
Maness, A. K., Greensboro; Grad. Jeff. Med. Coll., 1928	1928	1929
McManus, W. L., Greensboro; Atlanta School of Med., 1906	1912	1913
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912	1912	1915
Meadows, W. J., Greensboro; Med. Coll. of Ala., 1894	1899	1904
Micheaux, Edward R., Greensboro (Hon.); Univ. of N. Y., 1889	1889	1904
Miles, May S., Greensboro; Laura Mem. Women's Coll. of Med., Cincinnati, Ohio, 1898	1904	1905

Moore, Chas. E., Greensboro; Jeff. Med. Coll., 1907.....	1907	1910
Moseley, Charles W., Greensboro (Hon.); Balt. Med. Coll., 1893	1893	1896
Ogburn, H. H., Greensboro; Johns Hopkins Univ., 1913.....	1913	1914
Parker, H. R., Greensboro; Univ. of Syracuse, 1923.....	1924	1925
Pate, J. F., Greensboro; Univ. of Md., and P. and S., Balt., 1908	1908	1915
Patman, W. L., Greensboro; Harvard Med. School, 1921.....	1926	1927
Patterson, Fred M., Greensboro; Univ. of Pa., 1924.....	1924	1928
Perry, Robt. E., Greensboro; Univ. of Pa., 1921.....	1921	1925
Post, J. J., Greensboro; Columbia Univ., 1919.....	1925	1926
Ravenel, S. F., Greensboro; Johns Hopkins, 1923.....	1923	1926
Reaves, C. R., Greensboro; Univ. of the South, 1906.....	1913	1913
Reaves, H. G., Ann Arbor, Mich., Univ. of Va., 1927.....	1927	1929
Reaves, W. P., Greensboro; Univ. of the South, 1903.....	1905	1907
Reitzel, Claude E., High Point; P. and S., Atlanta, 1902.....	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. Va., 1916.....	1926	1927
Roberson, Charles, Greensboro; Long Island Coll. Hosp., 1897..	1897	1901
Saunders, S. Stewart, High Point; Harvard Med. School, 1924..	1926	1927
Schoonover, R. A., Greensboro; Baltimore Med. Coll., 1905....	1912	1912
Sharp, O. L., Greensboro; Jeff. Med. Coll., 1922.....	1924	1925
Shelburne, P. A., Greensboro; Univ. of Va., 1927.....	1928	1928
Shohan, Joseph, Greensboro; Coll. P. and S., Balt., 1901.....	1914	1924
Shreve, J. R., Brown Summit; N. C. Med. Coll., 1915.....	1915	1920
Simmons, L. L., Greensboro; Univ. of Tenn., 1893; Vanderbilt Univ., 1899.....	1918	1919
Slate, J. W., High Point; Univ. Coll. of Med., Rich., 1900.....	1899	1925
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908.....	....	1913
Spoon, A. O., Greensboro; Univ. of N. C., 1908.....	1908	1910
Spruill, Jos. L., Jamestown; Univ. of Md., 1895.....	1895	1907
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887....	1887	1891
Stanton, T. M., High Point; Med. Coll. of Va., 1916.....	1916	1917
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916.....	1916	1917
Stirewalt, N. S., High Point.....	....	....
Sumner, E. A., High Point; Baylor Univ., Tex., 1925.....	1926	1927
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906.....	1906	1907
Taylor, F. R., High Point; Univ. of Pa., 1913.....	1913	1915
Taylor, James N. Greensboro; Med. Coll., of Va., 1901.....	1902	1905
Taylor, Jas. T., Greensboro; Univ. of Mo.; Coll. of P. and S., Balt., 1908.....	1908	1910
Taylor, S. R., Greensboro; Univ. of Pa., 1921.....	1921	1924
Taylor, Wesley, Greensboro; U. of Mich., 1899.....	1925	1926
Thomas, J. G., Greensboro; Med. Coll. Va., 1915.....	1915	1920
Thompson, C. D., High Point; Univ. of Tenn., 1901.....	1901	1904
Turner, J. P., Greensboro; Univ. of Md., 1896.....	1897	1904
Whittington, Claude, Greensboro; Grad, Univ. of Md., 1927....	1927	1929
Wilkerson, C. E., Greensboro; Univ. of Nashville, 1907.....	1908	1909
Wilson, Albert R., Greensboro (Hon.); Jeff. Med. Coll., 1882..	1882	1882
Williams, John D., Guilford Station (Hon.); Vanderbilt Univ., 1898.....	1898	1898
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917.....	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918.....	1918	1920
Woodruff, Fred G., High Point; Med. Coll. of Va., 1917.....	1917	1919

Wyatt, H. L., Greensboro; Med. Coll. of Va., 1916	1924	1925
York, Alexander A., High Point; Chattanooga Med. Coll., 1907	1907	1909

HALIFAX COUNTY SOCIETY

President: J. W. Martin, Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920
Secretary: Z. P. Mitchell, Weldon; Med. Coll. of Va., 1920	1920	1921
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., Va., 1911	1914	1916
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918	1918	1920
Long, T. W. M., Roanoke Rapids; Univ. Coll. of Med., Va., 1908	1909	1910
McDaniel, L. E., Jackson; Univ. of Md., 1911	1915	1916
Neville, C. H., Scotland Neck; Tulane Univ., 1927	1927	1927
Nicholson, B. M., Enfield; Va. Univ. Coll. of Med., 1910	1910	1913
Parker, J. W., Seaboard; Med. Coll. of Va., 1927	....	1929
Royster, Thomas H., Roanoke Rapids; Univ. Coll. of Med., Richmond, 1908	1908	1914
Seawell, Marion H., Jackson; Med. Coll. of Va	1926	1927
Smith, O. F., Scotland Neck; Univ. Coll. of Va., 1899	1899	1904
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917	1917	1920
Weathers, Bahnson, Roanoke Rapids; Wash. Univ. Med. School, St. Louis, 1917	1921	1922

HARNETT COUNTY SOCIETY

President: John W. McLean, Godwin; N. C. Med. Coll., 1902	1902	1906
Secretary: A. T. Wyatt, Lillington; Jeff. Med. Coll., 1919	1919	1927
Corbett, C. L., Dunn; Emory Univ., 1927	....	1928
Halford, Jos. W., Lillington; Geo. Wash. Univ., 1904	1905	1905
Hicks, Isham Faison, Dunn; N. C. Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn (Hon.); Balt. Med. Coll., 1898	1898	1898
Holt, Wm. P., Erwin (Hon.); Jeff. Med. Coll., 1895	1895	1901
Holt, Wm. P., Jr., Erwin; Jeff. Med. Coll., 1926	1926	1927
McKay, Joseph F., Buies Creek (Hon.); S. C. Med. Coll., 1884	1885	1900
Martin, J. F., Dunn; N. C. Med. Coll., 1905	1905	1918
Melvin, Wayman C., Linden; Univ. Coll. of Med., Richmond, 1900	1900	1905
Odell, J. W., Dunn	....	....
Parker, Paul G., Erwin; Med. Coll. of Va., 1916	1916	1917
Sexton, C. Hector, Dunn; Univ. of Md., 1890	1890	1904

HAYWOOD COUNTY SOCIETY

President: W. C. Johnson, Canton; Tulane Univ. of La., 1912	1912	1917
Secretary:	....	....
Abel, J. F., Waynesville (Hon.); Univ. of Balt., 1892	1892	1899
Allen, Rufus L., Waynesville (Hon.); Univ. of Md., 1885	1885	1889
Brewton, W. A., Canton; Univ. of Pa., 1927	1927	....
Davis, F. M., Canton; Vanderbilt Univ., 1894	1894	1904
Francis, Wm. G., Waynesville; Jeff. Med. Coll., 1915	1916	1925
Kirkpatrick, W. L., Waynesville; Univ. Vanderbilt, 1894	1894	1895
McCracken, J. R., Waynesville; N. C. Med. Coll., 1902	1902	1903

Reeves, J. L., Canton	....	....
Russell, Jesse M., Canton; University of Nashville, 1911	1911	1912
Sprinkle, W. M., Waynesville	....	....
Stringfellow, Jas. L., Waynesville; Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Waynesville; Jeff. Med. Coll., 1905	1905	1907
Stringfield, Thomas (Hon.); Waynesville; Vanderbilt Univ., 1898	1898	1899

HENDERSON COUNTY SOCIETY

President: R. C. Sample, Hendersonville; Univ. of Pa., 1915	1915	1919
Secretary: W. O. Allen, Hendersonville; Med. Coll. of S. C., 1925	1926	1926
Brackett, W. E., Hendersonville; Jeff. Med. Coll., 1915	1915	1924
Brown, J. S., Hendersonville (Hon.); Northwestern Univ., 1893	1894	1895
Cliff, B. F., Hendersonville; Geo. Washington Univ., 1908	1909	1915
Dixon, Guy E., Hendersonville; P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville; Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville (Hon.); Univ. of Md., 1877	1889*	1890
Fauntleroy, Jas. W., Zirconia; P. and S., Columbia	1900	
Greenwood, S. E., Fletcher; Tenn. Med. Coll., 1902	1903	1904
Howe, Wm. B. White, Jr., Hendersonville; Med. Coll. of S. C., 1906	1907	1908
Kirk, W. R., Hendersonville; Central University	1901	1903
Mallet, E. P., Hendersonville; L. I., Coll. Hosp., Brooklyn, 1889	1914	1914
Pate, J. F., East Flat Rock; Med. Coll. of S. C., 1927	1927	1928
Payne, J. W., E. Flat Rock; Med. Coll. Maryland, 1903	1924	1926
Staton, H. V., Hendersonville; Grad. Univ. of Md., 1927	1927	1929
Sumner, Thos. W., Fletchers; Jefferson Med. Coll., 1910	1910	1911
Weddington, J. L., Hendersonville; Sou. Med. Coll., Atlanta, 1898	1925	1926
Woodcock, J. H., Hendersonville; Hos. College of Med., 1892	1894	1899

HERTFORD COUNTY SOCIETY

President: W. B. Pollard, Winton; Univ. of Pa., 1899	1903	1905
Secretary: Paul H. Mitchell, Ahoskie; Univ. Coll. of Med., Richmond, 1907	1907	1908
Futrell, L. M., Murfreesboro; Va. Med. Coll., 1914	1914	1918
McCoy, C. M., Ahoskie; Grad. Tulane, 1927	1927	1930
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: Wesley Grimes Byerly, Sanatorium; Med. Coll., Richmond, 1924	1924	1925
Secretary: J. H. Williams, Sanatorium; Jeff. Med. Coll., 1920	1920	1922
Bittinger, S. M., Sanatorium; Geo. Wash. Univ., 1918	1924	1924
Brown, G. W., Raeford; Ky. School of Med., Louisville, 1898	1900	1900
Easom, H. F., Sanatorium; Grad. Wash. Univ. Med. School	1929	1929
Geddie, K. B., Sanatorium; Jeff. Med., 1921	1921	1923
Hooker, J. S., Sanatorium; Emory Univ., 1923	1923	1924
McBrayer, L. B., Southern Pines (Hon.); Louisville Med. Coll., 1899	1899	1900

McBrayer, R., Long Island, N. Y.; Univ. of Pa., 1916	1916	1917
Matheson, R. A., Raeford; Jeff. Med. Coll., 1926	1926	1928
McCain, P. P., Sanatorium; Univ. of Md., and Coll. P. and S., Balt., 1911	1914	1914
Milhan, C. G., Sanatorium; Grad. Jefferson, 1927	1927	1930
Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Thomas, C. D., Sanatorium; Univ. of Indiana, 1926	....	1930

HYDE COUNTY SOCIETY

President:	....	....
Secretary:	....	....
Harris, Arthur Graham, Fairfield; Univ. of the South, 1905	1905	1908

IREDELL-ALEXANDER COUNTIES

President: Lonnie M. Little, Statesville; Jeff. Med. Coll., 1925	1925	1927
Secretary: Roy C. Tatum, Statesville; Jeff. Med., 1919	1919	1920
Adams, M. R., Statesville (Hon.); Univ. of Md., 1878	1884	1884
Alexander, Jas. M., Statesville; Georgetown Univ., 1925	1926	1927
Anderson, Thos. Eli., Statesville (Hon.); Jeff. Med. Coll., 1878	1879	1879
Asbill, David S., Statesville; Grad. Med. Coll. of S. C., 1926	1929	1930
Bell, A. E., Mooresville; Univ. of Md., and Coll. of P. and S., 1897	1897	1904
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909, and Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville; N. C. Med. Coll., 1907; Jeff. Med. Col., 1908	1907	1913
Gibson, L. O., Statesville; N. C. Med. Coll., 1913	1913	1915
Gilmore, W. D., care of: State Sanatorium, Basin, Wyoming; Univ. of N. C., 1903	1903	1904
Goode, T. V., Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923	1923	1925
Jurney, Peter Claywell, Turnersburg; Med. Coll. of Va., 1901	1901	1904
Lackey, M. A., Mooresville; N. C. Med. Coll., 1917	1923	1924
Leeper, Donald H., Hiddenite; N. C. Med. Coll., 1906	1906	1913
Little, E. E., Statesville, Rt. 6; N. C. Med. Coll., 1912	1912	1915
Long, H. F., Statesville (Hon.); Balt. Med. Coll., 1891	1892	1893
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
McLaughlin, J. E., Statesville (Hon.); Univ. of Md., 1886	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
Mitchell, G. T., Jennings; Jeff. Med. Coll., 1927	1927	1928
Myers, D. L., Jennings; Tulane, 1925	1928	1929
Nicholson, C. R., Statesville; N. C. Med. Coll., 1912	1912	1916
Poston, J. Lewis, Statesville; Jeff. Med. Coll., 1922	1923	1924
Pressly, Jas. L., Statesville; Jeff. Med. Coll., 1925	1925	1928
Price, H. L., Taylorsville; N. C. Med. Coll., 1914	1914	1914
Rhyne, S. A., Statesville, N. C. Med. Coll., 1915	1915	1920
Sharpe, Frank L., Statesville; Univ. of N. C., 1904	1904	1905
Sherrill, C. L., Statesville; N. C. Med. Coll., 1914	1914	1915
Sloan, A. B., Mooresville; Med. Coll. of Va., 1924	1924	1926

Talley, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville; N. C. Med. Coll., 1906	1906	1917
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914
Trivette, W. A., Hamptonville; Med. Coll. of Va., 1916	1916	1925
Waddell, Robert. L., Mooresville; Grad. Med. Coll., of Va., 1929	1929	1930

JACKSON COUNTY SOCIETY

President: Chas. Z. Candler, Sylva; P. and S., Atlanta, 1901	1901	1904
Secretary: D. D. Hooper, Sylva; Univ. of Med., Va., 1905	1905	1905
Nichols, Alvin A., Sylva; Univ. of Nashville Med. Dept., 1898	1904	1904
Nichols, Asbury S., Sylva; Tenn. Med. Coll., 1906	1907	1913
Van Epp, Owen B., Cashiers; Cleveland Pulte Med. Coll., 1900	1923	1923
Wilkes, Grover C., Sylva; N. C. Med. Coll., 1916	1916	1920

JOHNSTON COUNTY SOCIETY

President: S. A. Duncan, Benson; Tulane Univ., 1924	1924	1926
Secretary: C. C. Massey, Smithfield; Jeff. Med. Coll., 1923	1923	1925
Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Booker, Edwin N., Clayton; Grad. Univ. of Va., 1925	1925	1930
Brooks, H. E., Clayton; Med. Coll. of Va., 1917	1917	1923
Davidian, Vartan A., Smithfield; Grad. Univ. Kiev, Russia	1929	1930
Fitzgerald, J. Herbert, Smithfield; Jeff. Med. Coll., 1920	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ. School of Med., 1887	1887	1890
Hinnant, Milford, Micro; Univ. of Md., 1912	1912	1913
Hocutt, Battle A., Clayton; Univ. of N. C. School of Med., 1906	1906	1908
Hooks, Thel., Smithfield; Med. Coll. of Va., 1901	1901	1903
McLemore, George A., Smithfield; Univ. of N. C., 1906	1906	1908
Mayerberger, I. W., Selma; Jeff. Med. Coll., 1907	1907	1909
Noble, R. J., Selma (Hon.); Ky. Med. School, 1875	1878	1878
Orr, W. J. B., Smithfield; Univ. of Md., 1920	1920	1922
Parker, G. E., Benson; Coll. of P. and S., Balt., 1886	1889*	1904
Person, J. B., Selma (Hon.); Med. Coll. of Va., 1897	1897	1900
Stanley, John H., Four Oaks; Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton; Univ. of N. C., 1905	1905	1907
Surles, J. B., Four Oaks; Jeff. Med. Coll., 1909	1909	1919
Utley, H. H., Benson; Balt. Med. Coll., 1906	1906	1910
Vick, Geo. D., Selma; Jeff. Med., Coll., 1906	1906	1907
Wharton, L. D., Smithfield (Hon.); Tulane Univ., 1893	1893	1894
Wilson, W. G., Smithfield; Jeff. Med. Coll., 1921	1921	1924

JONES COUNTY SOCIETY

President: A. F. Hammond, Pollocksville; Univ. Coll. of Med., Va., 1903	1903	1914
Secretary: B. W. Page, Trenton; Tulane Univ., 1909	1909	1919
Bell, J. C., Maysville; P. and S. Balt., 1910	1915	1922

LEE COUNTY SOCIETY

President:	....	....
Secretary: M. L. Matthews, Sanford; Univ. of N. C., 1903	1903	1904
Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925	1925	1926
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919

Knight, Floyd L., Sanford; Univ. of Va., 1924	1925	1926
Lutterloh, I. H., Sanford; Vanderbilt Univ., 1890	1894*	1922
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921	1921	1922
Lynn, McIver, Sanford; Kentucky Univ., 1901	1902	1902
Monroe, J. P., Sanford; P. and S., Balt., 1901	1901	1905
O'Briant, A. L., Sanford; Jeff. Med. Coll., 1920	1920	1922
Scott, Charles L., Sanford; Univ. of Md., 1897	1899	1916
Sowers, Roy G., Jonesboro; Univ. of Md., 1923	1923	1924
Stockton, W. I., Carthage, R. F. D.; Coll. of P. and S., Univ. of Md., 1915	1915	1925
Watson, Leon, Broadway; N. C. Med. Coll., 1900	1900	1904

LENOIR COUNTY SOCIETY

President: Paul F. Whitaker, Kinston; Med. Coll. of Va., 1922	1922	1924
Secretary: A. L. Hyatt, Kinston; Univ. of Md., 1910	1910	1921
Adams, L. C., La Grange; N. C. Med. Coll., 1903	1903	1921
Boney, Elwood R., Kinston; Univ. of Pa., 1926	1926	1927
Carr, M. L., La Grange; Med. Coll. Va., 1916	1916	1920
Dixon, Wm. H., Kinston; Med. Coll. of Va., 1901	1901	1901
Hardy, Ira M., Med. Coll. of Va., 1901	1902	1902
Lee, Mike, Kinston; Tulane Univ., 1926	1926	1927
Lee, Thos. L., Kinston; Med. Coll. Va., 1926	1926	1927
McCuiston, A. M., Kinston; N. C. Med. Coll., 1911	1911	1917
McGeachy, R. S., Kinston (Hon.); Bellevue Hosp., 1894	1894	1895
Mangum, C. P., Kinston; Jeff. Med. Coll., 1918	1918	1920
Moseley, Z. V., Kinston; Va. Univ. Coll. of Med., 1913	1913	1914
Parrott, Albert DeK., Kinston; Univ. Coll. of Med., 1906	1906	1908
Parrott, Jas. M., Kinston (Hon.); Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston; Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston; Tulane Univ., 1899	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Sabiston, Frank, Kinston; Univ. of Md., 1918	1919	1926
West, B. C., Kinston; Univ. of Pa., 1924	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917	1917	1920
Woodley, C. B., Kinston; Univ. of N. Y., 1886	1886	1890
Wooten, Floyd P., Kinston; Jeff. Med. Coll., 1920	1920	1923

LINCOLN COUNTY SOCIETY

President: W. G. Bandy, Lincolnton; Vanderbilt Univ., 1908	1912	1916
Secretary: W. V. Costner, Lincolnton; Jeff. Med. Coll., 1924	1924	1927
Cornwell, A. M., Lincolnton; Grad. Geo. Wash. Univ., 1927	1927	1928
Crowell, L. A., Lincolnton (Hon.); Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Lawndale, R. 1; Atlanta Med., 1914	1916	1919
Elliot, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916	1916	1917
Gamble, J. F., Lincolnton; Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Crouse; Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Jacocks, W. P., New York City; Univ. of Pa., 1911	1911	1913
Kiser, W. C., Lincolnton; Southern Med. Coll., Ga., 1889	1893	1904
Lee, R. E., Lincolnton; Univ. of Md., 1896	1896	1918
Shellum, O. W., Denver; N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President: John F. Jonas, Marion; Balt. Med. Coll., 1903.....	1903	1903
Secretary: Harry B. Ditmore, Marion; Univ. of Pa., 1925.....	1925	1928
Ashworth, B. L., Marion (Hon.); P. and S., Balt., 1892.....	1893	1900
Bingham, Plato, Marion; Hospital Med. Atlanta Coll.. Eclectic	1913	1929
Butt, R. B., Marion; Emory Univ., Atlanta, 1920.....	1920	1921
Hempbill, C. H., Marion; Grad. Univ. of Md., 1913.....	1913	1916
Johnson, John B., Old Fort; Univ. Louisville Med. Dept., 1905..	1914	1914
Justice, Gaston B., Marion; P. and S., Atlanta, 1907.....	1907	1907
Kirby, Guy S., Marion; Univ. Coll. of Va., 1897.....	1896	1903
McIntosh, D. M., Old Fort; Med. Coll. of Va., 1904.....	1907	1909
Miller, J. F., Marion; Med. Chi. Phila., 1906.....	1915	1919
Robinson, W. A., Old Fort		

MACON-CLAY COUNTIES SOCIETY

President: S. H. Lyle, Franklin (Hon.); Univ. of Nashville, 1883	1881	1882
Secretary: W. A. Rogers, Franklin (Hon.); Univ. of Nashville, 1898.....	1898	1898
Angel, F., Franklin; Jeff. Med. Coll., 1918.....	1923	1924
Fouts, J. H., Franklin; Vanderbilt Univ., 1895.....	1895	1918
Horsley, H. T., Franklin; Balt. Med. Coll., 1907.....	1915	1918
Killian, Frank M., c/o Nantahala Power & Light Co., Nantahala, N. C.; Grad. Univ. of Louisville, Ky., 1929.....	1929	1930
McGuire, B. B., Rainbow Springs; Jeff. Med. Coll., 1918.....	1919	1928
Williams, N. G., Franklin; Emory University, 1917.....	1924	1926

MADISON COUNTY SOCIETY

President: Eva M. Locke, White Rock; Univ. of Mich., 1900....	1921	1922
Secretary:	....	....
Kimberly, David, Jr., Hot Springs; Univ. of Cinn., 1924.....	1926	1927
Robinson, Willard F., Mars Hill; Vanderbilt Univ., 1896.....	1903	1904
Sams, W. A., Marshall; Lincoln Memo., 1911.....	1919	1920
Tilson, Jacob Carson, Marshall; Lincoln Memorial Univ., 1892	1885	1904

MARTIN COUNTY SOCIETY

President: Vernon Albert Ward, Robersonville; Jeff. Med. Coll., 1908.....	1908	1914
Secretary: Wm. E. Warren, Williamston; Non-grad., Univ. N. Y.	1893	1894
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890.....	1890	1893
Pittman, E. E., Oak City; Med. Coll. of Va., 1919.....	1919	1920
Rhodes, James S., Williamston; Med. Coll. of Va., 1906.....	1906	1907
Saunders, Jos. H., Williamston; Univ. Coll. of Med., Va., 1905	1905	1909
Smithwick, James E., Jamesville; Univ. Coll. of Med., 1897.....	1897	1904
Ward, Jesse E., Robersonville; Univ. of Md., 1904.....	1904	1905

MECKLENBURG COUNTY SOCIETY

President: L. G. Gage, Charlotte; Univ. of Va., 1915.....	1921	1922
Secretary: R. B. McKnight, Charlotte; Univ. of Pa., 1920.....	1920	1928
Abernathy, H. N., Charlotte (Hon.); Louisville Med. Coll., 1894	1894	1899

Alexander, M. Janet., Montgomery, India; Women's Med. Coll., Pa., 1917	1917	1918
Alexander, Jas. R., Charlotte (Hon.); Univ. of Md., 1894	1894	1899
Allan, William, Charlotte; P. and S., Balt.; 1906	1906	1914
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917	1917	1918
Austin, Frederick De Costa, Charlotte; N. C., Med. Coll., 1907	1907	1908
Barret, H. P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1910
Black, Geo. Wm., Pineville; Med. Coll. of Va., 1924	1924	1925
Blair, Andrew, Charlotte; U. of Pa., 1924	1925	1926
Blalock, B. K., Charlotte; Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Bradford, W. Z., Long Island College Hospital, Brooklyn, N. Y., Grad. Univ. of Pa., 1928	....	1930
Brenizer, A. G., Jr., Charlotte; Johns Hopkins, 1908 and Univ. of Heidelberg	1911	1911
Britt, C. S., Charlotte; Emory Univ., 1920,	1925	1926
Craven, Thomas, Huntersville; Jeff. Med. Coll., 1917	1917	1918
Craven, W. W., Charlotte; Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte (Hon.); Univ. of Md., 1893	1892	1894
Davidson, John E. S. (Hon.); Charlotte; Univ. of Md., 1894	1898	1898
Davis, Steven W., 501 Professional Bldg., Charlotte, N. C., Grad. Univ. of Pa. Med. School, 1927	1927	1929
De Armon, J. McC. (Hon.); 4 McKinnon Bldg., Charlotte; Univ. of Md., 1886	1886	1887
Donnelly, J., Huntersville; Univ. of N. C., 1905	1905	1918
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, Yates W., Charlotte; Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte; Univ. Coll. of Va., 1906	1909	1909
Fetner, L. M., Charlotte; N. C., Med. Coll., 1914	1914	1915
Gallant, Robert M., Charlotte; N. C. Med Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chir., Phila., 1913	1922	1923
Gibbon, James, Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887	1887	1888
Hand, Edgar H., Charlotte; N. C. Med. Coll., 1907	1907	1913
Hart, V. K., Statesville; Univ. of Pa., 1921	1924	1925
Henderson, S. McD., Charlotte; Univ. of Md., 1894	1894	1904
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Holton, Thos. J., Charlotte; Emory Univ., 1909	1925	1926
Houser, O. J., Charlotte; N. C. Med. Coll., 1914	1914	1916
Hovis, L. W., Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Route 1 (Hon.); Bellevue Hosp., N. Y., 1875	1880	1880
Hunter, M. C., Huntersville; Coll. of P. and S., Balt., 1882	1882	1882
Hunter, Myers, Charlotte, Georgetown Univ., 1905	1906	1908
Irwin, Hammer, C., Pocatella, Idaho; Univ. of Md., 1905	1908	1916
Irwin, J. R., Charlotte (Hon.); Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte; Med. Dept., Vanderbilt Univ., 1899	1913	1916
Kelleher, L. B., Charlotte	....	....

Kelly, Luther W., Charlotte; Univ. of Va., 1924	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte; Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte; N. C. Med. Coll., 1906	1906	1908
Leinbach, Robt. F., Charlotte; Univ. of Pa., 1907	1907	1910
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
McCoy, Thos. M., Charlotte; N. C. Med. Coll., 1905	1906	1910
McFadden, R. H., Charlotte; S. C. Med. Coll., 1912	1927	1927
McGregor, Geo. D., Charlotte; Univ. of Va., 1925	1927	1928
McKay, Hamilton W., Charlotte; N. C. Med. Coll., 1909; Jeff. Med. Coll., 1910	1911	1913
McKay, Robert W., Charlotte	....	....
McLaughlin, Calvin S., Charlotte; Univ. of Md., 1896	1896	1903
McLean, E. K., Charlotte; Univ. of Texas, 1919	1927	1928
McLeskey, J. H., Charlotte; Univ. of Ga., 1909	1927	1928
McPhail, L. D., Charlotte; Univ. of Md., 1900	1900	1902
McPhaul, W. A., Charlotte; Univ. of Nashville, 1904	1905	1907
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte; Univ. of Md., 1905	1902	1907
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Misenheimer, Charles A., Charlotte (Hon); N. Y. Univ. Med. Coll., 1882	1882	1882
Misenheimer, Thos. M., Charlotte; S. C., Med. Coll., 1925	1925	1927
Montgomery, John C., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1891	1891	1895
Moore, Alexander W., Charlotte; Univ. of Va., 1901; Univ. and Bellevue Hosp. Med. Coll., 1902	1912	1913
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliot, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte; N. C. Med. Coll., 1902; Jeff. Med., 1903	1902	1904
Munroe, J. P., Charlotte (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; N. C. Med. Coll., 1911; Bellevue Hosp., Med. Coll., 1916	1911	1920
Myers, John Q., Charlotte; N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte; Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919	1921	1922
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914	1921	1929
Newell, Leon B., Charlotte; Univ. of N. C., 1905	1905	1908
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1924
Nisbet, D. Heath, Charlotte; Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte (Hon.); Med. Coll. of S. C., 1889	1889	1889
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1909
Nowlin, Preston, Charlotte; Grad. Univ. of Va., 1924	....	1930
Patterson, Reid, Charlotte; N. C., Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte; N. C. Med. Coll., 1906	1906	1908
Perry, Leora, Charlotte; Grad. Med. Coll. of S. C., 1926	....	1930
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914

Phillips, C. C., Charlotte; N. C. Med. Coll., 1912	1912	1917
Pressly, Geo. W., Charlotte (Hon.); Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., Charlotte, Route 3; Univ. Coll. of Med., Richmond, 1907	1907	1908
Rankin, Watson S., Charlotte (Hon.); Univ. of Md., 1901	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919	1919	1922
Reid, Thomas N., Matthews; N. Y. Univ. Med. Coll., 1891	1891	1904
Richardson, Jas. C., Vanderbilt U., 1920	1920	1922
Ross, Otho B., Charlotte; Univ. of Pa., 1909	1909	1912
Ross, Thos. W., Charlotte; Grad. Jeff. Med. Coll., 1927	....	1930
Sasser, T. J., Charlotte	....	....
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914	1914	1920
Shirley, H. C., Charlotte; Johns Hopkins, 1918,	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1914
Smith, F. C., Charlotte; Jeff. Med., 1921	1921	1925
Sparrow, Thos. De L., Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Strong, Charles M., Charlotte (Hon.); Univ. of Md., 1889	1889	1898
Strong, Wm. M., Charlotte; N. C. Med. Coll., 1904	1904	1905
Sullivan, Claude H., Charlotte; Emory Univ. 1917	1924	1925
Taylor, H. C., Charlotte, Chadwick Sta.; Tenn. Med., 1886	1910	1915
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Townsend, M. L., Washington, D. C., Indiana Med. Coll., 1906	1912	1913
Tucker, John H., Charlotte; Univ. of Va., 1889	1901	1911
Tydeman, F. W. L., St. Louis, Mo.; N. C. Med. Coll., 1912	1912	1918
Wakefield, Harry A., Charlotte; N. C. Med. Coll., 1908	1908	1911
Walker, L. D., Charlotte; Med. Coll. of Va., Richmond, 1908	1917	1919
Wannamaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921	1924	1924
Whisnant, Albert M., Charlotte (Hon.); P. and S., Balt. 1893	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922	1924	1925
Whitley, Ayer, Matthews; Balt. Med. Coll., 1908	1908	1919
Wingate, G. C., Charlotte; N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1911
Withers, J. J., Davidson; Grad. Jeff. 1909	1909	1930
Woodruff, Julian S., Charlotte; Univ. of Md., 1920	1920	1923

MITCHELL-WATAUGA COUNTIES SOCIETY

President: C. F. Lambert, Spruce Pine; Jeff. Med. Coll., 1921	1921	1923
Secretary: C. A. Peterson, Spruce Pine; N. C. Med. Coll., 1907	1907	1908
Ewing, J. B., Spruce Pine	....	....
Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
Hagaman, J. B., Boone, 1915	1915	1915
Perry, H. B., Boone; N. C. Med. Coll., 1905	1905	1922

MONTGOMERY COUNTY SOCIETY

President: N. G. Nicholson, Jr., Mt. Gilead; N. C. Med. Coll., 1917	1917	1920
Secretary: Charles Daligny, Troy (Hon.); Univ. of Paris, 1878	1889	1891

Griffin, H. L., Star; Med. Coll. of Va., 1926	....	1928
Harris, W. T., Troy; Med. Coll. of ——, 1925	1926	1927
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886	1886	1892
McMillan, J .M., Candor; P. and S., Atlanta, 1909	1909	1911
Rankin, Pressly R., Mt. Gilead; N. C. Med. Coll., 1910	1910	1912
Shamburger, John P., Star (Hon.); Univ. of Md., 1890	1890	1892
Thompson, Alexander Frank, Troy; Med. Coll. of Indiana, 1895	1895	1904

MOORE COUNTY SOCIETY

President: A. McN. Blue, Carthage; Tulane Univ., 1915	1916	1917
Secretary: R. G. Rosser, Vass; N. C. Med. Coll., 1909	1909	1917
Blair, A. McNeil, Southern Pines; Niagara Univ., 1897	1904	1906
Davis, J. Franklin, High Falls; Med. Coll. of Va., 1912	1912	1914
Dickie, J. W., Southern Pines; Jeff. Med. Coll., 1918	1920	1921
Durham, C. W., Pinehurst; Grad. Geo. Wash. Univ., 1927	1928	1929
Edwards, E. C., Southern Pines; Vanderbilt, 1924	1928	1929
Felton, R. L., Jr.	....	....
Grier, Charles T., Shelter Island Heights, N. Y.; N. C. Med. Coll., 1910	1912	1913
McDuffie, W. N., Hemp; Emory Univ. Sch. of Med., Atlanta, 1916	1920	1921
McLeod, A. H., Aberdeen; Balt. Med. Coll., 1896	1896	1904
McLeod, W. G., Southern Pines; Baylor Univ., 1921	1926	1927
Marr, M. W., Pinehurst; Tufts Coll. Med. School, Boston, 1907	1909	1915
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915	1915	1916
Monroe, C. R., Pinehurst; Univ. of Md., 1924	1925	1928
Mudgett, W. C., Southern Pines; Maryland Med. Coll., 1903	1908	1911
Shields, Henry B., Carthage (Hon.); Atlanta Med. Coll., 1882	1887	1904
Street, M. E., Glendon; P. and S., Balt., 1893	1893	1902
Symington, John, Carthage; Univ. of Md., 1902; London Sch. of Hygiene and Tropical Med., 1926	1927	1928

NASH COUNTY SOCIETY

President: Wm. Bernard Kinlaw, Rocky Mount; Univ. of Pa., 1920	1920	1923
Secretary: G. M. Brooks, Rocky Mount; Jeff. Med. Coll., 1918	1919	1919
Battle, Ivan Proctor, Rocky Mount; Jefferson Med. Coll., 1904	1905	1914
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Brantley, Hassell, Spring Hope; Jeff. Med. Coll., 1888	1888	1901
Coppedge, T. O., Nashville; Coll. of Phys. and Surg., Balt., 1908	1909	1917
Corbett, J. P., Red Oak	....	....
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Rich., 1911	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Denton, A. L., Castalia; Med. Coll. of Va., 1918	1921	1923
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919	1919	1922
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904	1906	1919
Hines, E. R., Rocky Mount; Med. Coll. of S. C., 1916	1916	1917
Jones, W. S., Nashville; Grad. 1927	1927	1927
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemual W., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Looney, J. W., Rocky Mount; Univ. of Va., 1909	1919	1919

Martin, J. H., Red Oaks; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount; P.and S., Balt., 1907	1907	1920
Reeves, G. F., Nashville	....	....
Rose, T. H., Rocky Mount	....	....
Smith, C. T., Rocky Mount; Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount; Univ. of La., 1914	1915	1916
Staley, S. Walter, Rocky Mount; Med. Coll. of S. C., 1901	1901	1914
Stone, M. L., Rocky Mount; Univ. of Pa.	1928	1929
Thorp, A. T., Rocky Mount; Univ. of Pa., 1921	1921	1923
Vann, J. R., Jr., Spring Hope; Jeff. Med. Coll., 1917	1917	1919
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1916
Winstead, J. A., Nashville; N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY SOCIETY

President: L. E. Farthing, Wilmington; Univ. of N. C., 1906	1906	1913
Secretary: A. McR. Crouch, Wilmington; Jeff. Med. Coll., 1916	1916	1918
Bellamy, Robert H., Wilmington; Jeff. Med. Coll., 1902	1902	1902
Bullock, Ernest S., Wilmington; Univ. of Md., 1911	1911	1911
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington; Univ. of N. C., 1905	1905	1907
Davis, H. V., Wilmington; Grad. Univ. of Md., 1927	1929	1930
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1916	1916
Freeman, J. D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Galloway, Walter Curtis, Wilmington (Hon.); Washington Univ., 1874	1880	1880
Goldston, A. B., Wilmington; Grad. Tulane, 1928	1929	1930
Green, Thomas M., Wilmington; Univ. of Md., 1901	1901	1904
Hall, James S., Wilmington; Univ. of S. Calif., 1900	1921	1924
Hamilton, John H., Wilmington; Med. Sch. of Harvard, 1916	1926	1926
Harris, Andrew H., Wilmington (Hon.); Medico-Chir., Phila., 1893	1892	1894
Hoggard, J. T., Wilmington; Univ. Med. Coll., Rich., 1906	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1919
Jewett, Robert D., Wilmington (Hon.); Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920	1920	1921
Koonce, S. Everett, Wilmington (Hon.); P. and S., of Balt., 1896	1896	1900
Madison, W. H., Wilmington; Grad. Tulane, 1929	1929	1930
McMillan, W. D., Wilmington (Hon.); Univ. of Md., 1869	1889*	1892
Mebane, W. C., Wilmington; N. C. Med. Coll., 1905	1905	1916
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Murphy, John G., Wilmington; Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Wilmington; Baltimore Med. Coll., 1893	1907	1908
Peterson, W. C., Wilmington; Univ. of Va., 1917	1920	1921
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Rodman, R. B., Wilmington; Grad. Med. Coll., of S. C., 1928	1928	1930
Schonwald, John T., Wilmington (Hon.); Long Island Coll., Hosp., 1879	1880	1881
Sidbury, J. B., Wilmington; Columbia Univ., N. Y., 1912	1915	1916

Sloan, D. B., Wilmington; Univ. of Pa., 1914	1914	1920
Slocum, R. B., Wilmington; Johns Hopkins, 1905	1907	1907
Smith, Slade A., Wilmington; N. C., N. C. Med. Coll., 1907	1907	1921
Turlington, W. T., Wilmington; Grad. Univ. of N. Y., 1929	1929	1930
Watson, Thomas M., Wilmington; Tulane Univ., 1919	1919	1920
Wessel, John C., Wilmington (Hon.); Univ. of Md., 1900	1900	1900

NORTHAMPTON COUNTY SOCIETY

Fleetwood, Jos. A., Conway; Tulane, 1921	1921	1923
Hodge, A. R., Severn; Med. Coll. of Va., 1925	1925	1926
Lewis, H. W., Jackson (Hon.); Univ. of N. Y., 1887	1889*	1887

ONSLOW COUNTY SOCIETY

President: Carl W. Sutton, Richlands; Tulane, 1905	1905	1907
Secretary: E. L. Cox, Jacksonville (Hon.); Univ. of Md., 1889	1889	1892
Bryan, Lorenzo D., Sneads Ferry; Tulane, 1910	1910	1911
Henderson, John P., Jacksonville; Va. Med Coll., 1918	1919	1921
Thompson, Cyrus, Jacksonville; Tulane Univ., 1878	1889*	1905

PAMLICO COUNTY SOCIETY

President: D. A. Dees, Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: J. J. Purdy, Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental; Med. Coll. of Va., 1903	1903	1916
McCotter, St. Elmo, Bayboro; P. and S., Atlanta, 1908	1908	1909

PASQUOTANK-CAMDEN-DARE COUNTIES SOCIETY

President:	....	....
Secretary: H. D. Walker, Elizabeth City; Univ. of Md., 1902	1902	1902
Bulla, M. S., Elizabeth City; Miami Med. Coll., Cinn., 1905	1921	1921
Combs, Howard, Elizabeth City; Grad. Jeff. Med., 1918	1918	1920
Fearing, Isaiah, Elizabeth City; P. and S., Balt., 1896	1896	1904
Griggs, John B., Elizabeth City; Univ. of Md., 1892	1892	1904
Hoyle, Huges B., Manteo; N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City; Univ. of Va., 1913	1913	1915
Lister, E. W., Elizabeth City; Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford; Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth Cilty; Univ. of Edinburgh, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City; Univ. of Md., 1903	1903	1904
Stevens, W. L., Shiloh; Univ. of Va., 1912	1912	1914
White, W. H. C., Elizabeth City; Univ. of Va., 1922	1929	1929
Williams, Claude B., Elizabeth City; Univ. Coll. of Med., Richmond, 1903	1903	1907
Ward, I. A., Elizabeth City; Univ. of N. C., 1907	1907	1915

PENDER COUNTY SOCIETY

President:	....	....
Secretary:	....	....
Taylor, W. I., Burgaw, N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President: Austin F. Nichols, Roxboro; Univ. of N. C., 1908..	1908	1909
Secretary: Geo. W. Gentry, Roxboro; Univ. of N. C., 1910.....	1910	1911
Beam, H. M., Roxboro; Columbia Univ., 1918.....	1918	1919
Love, Bedford E., Roxboro; Univ. of Md., 1904.....	1904	1905
Merritt, John H., Woodsdale, Rt. 1; Univ. of N. C., 1906.....	1907	1908
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914.....	1914	1916

PITT COUNTY SOCIETY

President: W. I. Wooten, Greenville; Jeff. Med., 1920.....	1920	1920
Secretary: J. M. Barrett, Greenville; Univ. of Pa., 1926.....	1926	1927
Basnight, Thos. G., Stokes; Univ. of Md., 1904.....	1905	1907
Beasley, E. B., Fountain; Univ. of Pa. School of Med., 1911..	1911	1915
Bonner, H. M., Morehead City; Med. Coll. of Va., 1897.....	1897	1918
Cox, B. T., Winterville; Univ. of Md., 1888.....	1888	1890
Crisp, S. M., Greenville; Univ. of Pa., 1923.....	1923	1925
Dixon, G. G., Ayden; Med. Coll. of Va., 1915.....	1915	1917
Drewry, W. H., Grimesland; Coll. of Va., 1926.....	1926	1926
Frizzelle, M. T., Ayden; Univ. Coll. of Med., Richmond, 1907..	1907	1909
Futrelle, W. E., Greenville; Jeff. Med. Coll., 1921.....	1921	1923
Garrenton, Cecil, Bethel; Med. Coll. of Va., 1908.....	1908	1915
Green, J. C., Greenville; Med. Coll. of Va., 1900.....	1900	1915
Ham, Clem, Greenville; Grad. Med. Coll. of S. C., 1926.....	1929	1930
Joyner, C. C., Farmville; Grad. Jeff. Med. Coll., 1899.....	....	1899
Morrill, D. S., Farmville; Balt. Med. Coll., 1897.....	1897	1903
Morrill, Jenness, Falkland; Univ. of Md., 1888.....	1888	1900
Nobles, Jos. E., Greenville; Jeff. Med. Coll., 1899.....	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914.....	1914	1920
Skinner, Louis Colton, Greenville; Univ. of Md., 1901.....	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914.....	1916	1920
Smith, R. C., Grifton; Jeff. Med. Coll., 1923.....	1923	1926
Spiggle, C. H., Grimesland.....	....	1930
Stone, G. G., Greenville; Univ. of Va., 1926.....	1927	1929
Tyson, J. J., Ayden; Med. Coll. of Va., 1928.....	1928	1930
Whitfield, Wm. Cobb., Grifton (Hon.); Univ. of Md., 1884....	1884	1884
Willis, W. M., Farmville; Med. Coll. of Va., 1914.....	1915	1924
Winstead, J. L., Greenville; Med. School of Univ. of Md., 1925	1925	....
Wright, R. H., Polyclinic Hospital, Philadelphia, Pa., Univ. of Pa., ...	1929	1930

POLK COUNTY SOCIETY

President: A. J. Jervey, Tryon; Med. Coll. of S. C., 1905.....	1923	1925
Secretary: E. McQueen Salley, Saluda; Univ. of Md., 1905...	1905	1908
Grady, Wm. Earle, Tryon (Hon.); Univ. of Md., and P. and S., Balt. 1894.....	1895	1899
Lea, J. I., Tryon; Mich. Coll. of Med. and Surg., 1906.....	1916	1925
Palmer, M. C., Tryon; Med. Coll. of S. C., 1910.....	1911	1914
Smith, D. L., Saluda and Spartanburg, S. C.; S. C. Med. Coll., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

President:	....	....
Secretary:	....	....

Hayworth, C. A., Asheboro; Univ. of Md., 1913	1913	1914
Hubbard, Charles C., Farmer (Hon.); Jeff. Med. Coll., 1888	1890	1900
Johnson, J. R., Ramseur; Med. Coll. of Va., 1927	1927	1929
Lambert, W. L., Asheboro; Jeff. Med. Coll., 1921	1921	1923
Moore, Wm. James, Asheboro; P. and S. Balt., 1893	1893	1901
Redding, Alex. H., Cedar Falls (Hon.); Coll. of P. and S. Balt., 1887	1889*	1900
Sumner, G. H., Asheboro; Tulane Univ., 1923	1923	1924
Tate, C. S., Ramseur; Balt. Med. Coll., 1893	1896	1914

RICHMOND COUNTY SOCIETY

President: Wm. Calvin Terry, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Secretary: A. C. Everett, Rockingham; Univ. of Md., 1897	....	....
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Caddell, G. C., Hoffman; Grad. N. C. Med. Coll., 1912	1912	1930
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918	1920	1921
Henry, T. B., Rockingham; Columbia Univ. Coll. P. and S., N. Y., 1917	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1911
James, W. D., Hamlet; Jeff. Med. Coll., 1908	1908	1908
Kinsman, Henry F., Hamlet; Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham; Vanderbilt Univ., 1894	1894	1903
Long, Z. F., Rockingham; Grad. Univ. of Pa., 1928	1928	1930
McCreary, A. B., Rockingham; Univ. of Tenn., 1922	1924	1924
McIntosh, W. R., Rockingham; N. C. Med. Coll., 1913	1916	1917
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Teague, S. E., Hamlet; Tulane Univ. of La., 1921	1921	1923
Webb, W. P., Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: Horace M. Baker, Lumberton; Harvard Med. School, 1917	1919	1919
Secretary: E. R. Hardin, Lumberton; Univ. of Ga., 1911	1915	1920
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912	1912	1915
Bowman, E. L., McDonalds; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914	1923	1924
Brown, J. P., Fairmont; Univ. of Md., 1883	1889*	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Costner, Thos. F., Lumberton; Jeff. Med. Coll., 1882	1889*	1918
Evans, W. E., Rowland; Med. Coll. of Va., 1894	1894	1904
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1907
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920	1920	1922
Johnson, Thomas C., Lumberton; Med. Coll. of Va., 1903	1903	1903
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908	1912	1913
McIntyre, Stephen, Lumberton; Grad. Jeff. Med. Coll., 1928	1928	1930
McMillan, Benj. F., Red Springs (Hon.); Univ. of Md., 1882	1884	1884

McMillan, R. D., Red Springs; Univ. of Md., 1910	1911	1912
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914	1914	1916
Pope, Henry T., Lumberton; N. C. Med. Coll., 1894	1893	1902
Reed, D. H., Maxton; Geo. Wash. Univ., 1901	1904	1917
Ricks, Leonard E., Fairmont, Med. Coll. of Va., 1896	1896	1913
Smith, John McNeill, Rowland; Jeff Med. Coll., 1908	1908	1909
Stamps, Thos., Lumber Bridge (Hon.); Univ. of Louisville, 1888	1888	1890

ROCKINGHAM COUNTY SOCIETY

President:	....	....
Secretary: M. P. Cummings, Reidsville; Jeff. Med. Coll., 1911	1911	1914
Abernathy, Miles B., Reidsville; N. C. Med. Coll., 1906	1906	1910
Anderson, L. L., Madison; Med. Coll. of Va., 1927	1927	1929
Boaz, Thos. A., Stoneville; Coll. of P. and S., Balt., 1892	1892	1905
Carter, P. C., Madison; Univ. of Md., 1916	1916	1920
Casteen, Kenan, Leaksville; Univ. of Bellevue Hosp., Med. Coll., 1918	1919	1921
Dillard, G. P., Draper; Bennett Med. Coll., 1916	1916	1919
Dixon, Hubert C., Madison; Univ. and Bellevue Hosp. Med. Coll., 1916	1916	1921
Fetzer, P. W., Madison; Univ. of Va. Dept. of Med., 1916	1916	1920
Hester, Wm., Reidsville	....	....
Jett, Samuel G., Reidsville; Univ, of the South, 1903	1908	1911
Johnson, W. A., Reidsville; N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville; Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville; Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville; Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray; Chicago Coll. of Med. and Surg., 1913	1915	1918
Ray, John B., Leaksville; Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, (R.F.D.);	1898	1898
Taylor, T. G., Leaksville; Ky. School of Med., 1877	1909	1910
Thacker, J. H., Reidsville; Medico-Chirurgical Coll., of Phila., Pa., 1889	1889	1921
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1907
Tyner, Carl V., Leaksville; Univ. and Bellevue Hosp. Med. Coll., N. Y., 1916	1916	1919
Wharton, Chas. R., Ruffin; Med. Coll. of Va., 1897	1904	1897
Wilson, N. G., Madison; N. C. Med. Coll., 1914	1914	1914

ROWAN COUNTY SOCIETY

President: C. W. Armstrong, Salisbury; Univ. of Md., 1914	1914	1915
Secretary: J. C. Eagle, Spencer; Jeff. Med. Coll., 1923	1923	1925
Andrews, E. D., Salisbury		
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Brawley, M. H., Salisbury; N. C. Med. Coll., 1910	1912	1914
Brown, Clarence E., Salisbury; N. C. Med. Coll., 1918	1920	1921
Brown, G. A., Mt. Ulla (Hon.); Univ. Coll. of Med., 1897	1897	1898
Busby, Julian G., Salisbury; Univ. of Md., 1904	1904	1905

Choate, Glenn Wm., Salisbury; N. C. Med. Coll., 1909	1909	1909
Choate, J. W., Salisbury; N. C. Med. Coll., 1915	1915	1924
Clement, Edward B., Salisbury; Jeff. Med. Coll., 1906	1906	1913
Council, J. B., Salisbury (Hon.); P. and S., Balt., 1885	1885	1885
Flemming, Giles M., Cleveland; Emory Univ., 1919	1919	1921
Kesler, R. C., Spencer	....	....
Ketchie, J. M., Salisbury; Jeff. Med., 1922	1922	1925
Lowery, J. R., Salisbury; Univ. of Md., 1904	1904	1913
McCutchan, Frank, Salisbury; Univ. of Va., 1920	1927	1928
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916	1916	1920
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919	1919	1922
Moncure, Wm., Jr.	....	....
Monk, Henry L., Salisbury; Med. Coll. of Va., 1897	1899	1903
Newman, Harold H., Salisbury; Johns Hopkins Univ., 1913	1914	1916
Peeler, John H., Salisbury; Univ. Coll. of Med., Va., 1899	1899	1904
Ramsay, Jas., G., Cleveland Clinic Hosp., Cleveland, O.; Univ. Pa., 1922	1924	1924
Seay, T. W., East Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer; Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer; Univ. of Tenn., 1903	1903	1913
Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
Stokes, Jas. Ernest, Salisbury; Univ. of Md., 1892	1900	1901
Summerell, E. M., China Grove (Hon.); Univ. of Pa., 1883	1883	1883
Tatum, Walter Lowe, Salisbury; Jeff. Med. Coll., 1922	1922	1924
Van Poole, C. M., Salisbury (Hon.); P. and S. Balt., 1880	1880	1880
West, Robert M., Salisbury; Med. Coll. of Va., 1900	1900	1904
Whitehead, Edward, Salisbury	....	1928
Woodson, Charles W., Salisbury; Columbia Univ., P. and S., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: C. F. Glenn, Rutherfordton; Univ. of Louisville	1927	1928
Secretary: Wm. C. Bostic, Forest City; Chattanooga Med. Coll., 1899; N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside; Chicago Coll. of Med. and Surg., 1910	1910	1911
Andrews, Robert M., Bostic; Memphis Hosp. Med. Coll., 1901	1904	1905
Biggs, Montgomery H., Rutherfordton; Univ. of Pa., 1897	1907	1908
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926	1926	1927
Buchanan, C. L., Union Mills; Tenn. Med. Coll., 1910	1910	1914
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Duncan, Amos C., Forest City; N. C. Med. Coll., 1919	1919	1920
Gold, Charles F., Rutherfordton; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen; Chattanooga Med. Coll., 1897	1902	1904
Head, W. T., Campbell, R. 4, S. C.; Atlanta Coll. P. and S., 1911	1911	1923
Hicks, Romeo, Henrietta (Hon.); Southern Med. Coll., Atlanta, 1888	1889*	1899
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920

Moss, G. O., Cliffside; Emory Univ., 1927	1927	1929
Norris, Henry, Bryn Mawr, Pa.; Univ. of Pa., 1897	1907	1908
Reid, George P., Forest City (Hon.); Univ. Coll. of Med., Va., 1895	1894	1999
Rucker, Adin Adam, Rutherfordton; Univ. of Md., 1908	1908	1909
Verner, Carl Hugh, Forest City; P. and S., Atlanta, 1912	1923	1927
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925	1925	1926

SAMPSON COUNTY SOCIETY

President: O. E. Underwood, Roseboro; Univ. of Med., Va., 1909	1909	1910
Secretary: J. Street Brewer, Roseboro; Jeff. Med. Coll., 1919	1919	1921
Crumpler, Paul, Clinton; Univ. of Tenn., 1907	1907	1908
Kerr, John D., Clinton; Univ. of Md., 1908	1908	1910
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton, (R.F.D.); Univ. Coll. of Med., Va., 1879	1879	1902
Parker, O. L., Clinton; Med. Coll. of Va., 1918	1918	1919
Royal, D. M., Salemburg; Med. Coll. of Va.,	1926	1928
Sessoms, E. T., Roseboro; N. C., Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg; Univ. Coll. of Med., Va., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Md., 1916	1916	1920
Small, Victor R., Clinton; Ohio State Univ. Med. Coll., 1916	1920	1921
Wilson, Robert B., Clinton; Ky. School of Med., 1889	1889	1904

SCOTLAND COUNTY SOCIETY

President: L. T. Buchanan, Laurinburg; Jeff. Med. Coll., 1913	1913	1917
Secretary: Evan A. Erwin, Laurinburg; Med. Coll. of S. C., 1912	1912	1913
Gibson, John S., Gibson; Univ. of Md., 1905	1905	1907
James, F. P., Laurinburg; Univ. of Pa., 1916	1916	1917
John, Peter, Laurinburg; Univ. of Md., 1897	1897	1904
Livingston, Everett Alex Gibson; Univ. of Md., 1912	1912	1913
McLean, Peter, Laurinburg; Univ. of Md., 1906	1907	1908
Pate, James G., Gibson; Univ. of Pa., 1916	1916	1917
Shaw, W. G., Wagram; P. and S., Balt., 1892	1895	1904
Wilcox, J. W., Rutland, Mass.; Univ of N. C., 1906	1906	1906
Wilkes, Marcus B., Laurel Hill; N. C. Med. Coll., 1912	1923	1923

STANLY COUNTY SOCIETY

President: Wm. Isaac Hill, Albemarle; Univ. of Md., and P. and S., Balt., 1897	1897	1904
Secretary: Julius Clegg Hall, Albemarle; Univ. Coll. of Med., Va., 1889	1899	1908
Allen, Jos. A., New London; Univ. Coll. of Med., Va., 1901	1901	1904
Bigler, V. L., Albemarle; Univ. Pittsburgh, 1925	1926	1927
Campbell, Jas., I., Norwood; N. C. Med. Coll.	1898	1898
Cox, Benj. F., Palmerville; Coll. of P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle; Univ. of N. C., 1909	1909	1910
Frazier, J. W., Badin; Jeff. Med. Coll., 1924	1924	1927
Gaskin, Lewis R., Albemarle; Med. Coll. of S. C., 1921	1924	1926
Hartsell, F. E., Oakboro; Balt. Med. Coll., 1895	1895	1902

Hathcock, Thomas A., Norwood; Univ. of Md., 1893	1893	1904
Laton, James F., Albemarle; N. C., Med. Coll., 1904	1904	1910
Lentz, C. M., Albemarle; N. C., Med. Coll., 1909	1909	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., Va., 1913	1913	1915
Shaver, W. T., Badin; Univ. of Md., 1918	1920	1921
Watson, Paul S., Oakboro; Med. Coll. of S. C., 1928	1928	1928

STOKES COUNTY SOCIETY

President:	....	....
Secretary:	....	....
Helsabeck, R. S., King; N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove (Hon.); Univ. of N. Y., 1868	1894*	1892
McCanless, Wm. V., Danbury; Univ. of N. Y., 1893	1889*	1904
Stone, Grady E., King; N. C. Med. Coll., 1915	1915	1920

SURRY COUNTY SOCIETY

President: John L. Woltz, Mt. Airy; Sou. Med. Coll., 1897	1902	1904
Secretary: R. E. Smith, Mt. Airy; Univ. of Pa., 1923	1923	1926
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Baird, C. A., Mt. Airy; N. C. Med. Coll., 1904	1904	1912
Bernard, Holman, Pinnacle; Med. Coll. of Va., 1912	1914	1919
Boyles, A. C., Lowgap; Univ. of Md., 1887; Balt. Univ. of Med., 1898	1889*	1912
Foster, M. T., Mt. Airy; Emory Univ., 1927	1927	1930
Flippin, Samuel T., Siloam (Hon.); N. C. Med. Coll., 1898	1898	1898
Folger, P. B., Dobson; Jeff. Med. Coll., 1922	1922	1924
Gambill, I. S., Elkin; N. C. Med. Coll., 1912	1912	1917
Hollingsworth, Edward M., Mt., Airy; Coll., of P. and S., Baltimore, 1886	1886	1904
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Mitchell, R. C., Mt. Airy; Univ. of Pa., 1919	1921	1923
Parks, Hugh, Elkin; Jeff. Med. Coll., 1921	1921	1928
Ring, Joseph W., Elkin; P. and S., Balt., 1880	1890*	1904
Salmons, H. C., Elkin; N. C., Med. Coll., 1904	1904	1908
Smith, Jas. T., Westfield; N. C. Med. Coll., 1898	1899	1918
Stone, Wesley M., Dobson; N, C., Med. Coll., 1906	1906	1907
Tillotson, S. F., Pilot Mountain; N. C. Med. Coll., 1905	1905	1922
Wellborn, William R., Elkin; N. C. Med.. Coll., 1905	1908	1913

SWAIN COUNTY SOCIETY

President:	....	....
Secretary:	....	....

TRANSYLVANIA COUNTY SOCIETY

President:	....	....
Secretary:	....	....
English, Edwin S., Brevard; Univ. of the South, 1901	1902	1904
Lyday, Abram E., Penrose; Lincoln Mem. Univ., 1891	1909	1904
Wilkerson, J. B., Rosman; Memphis Hosp. Med. Coll.	1923	1925

UNION COUNTY SOCIETY

President: C. A. Bolt, Marshville	....	....
Secretary: William M. Love, Monroe; N. C. Med. Coll., 1915	1915	1919

Ashcraft, J. E., Monroe; Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville; Med. Coll., of Va., 1895	1895	1895
Garren, R. H., Monroe; Univ. of Nashville, 1900	1901	1904
Goudelock, Jno. J., Monroe; Med. Coll., S. C., 1923	1924	1924
James, Albert W., Monroe; Jeff. Med. Coll., 1918	1918	1921
McCombs, C. J., Monroe; Grad. N. C. Med. Coll., 1905	....	1930
Mahoney, A. F., Monroe; Univ. Louisville, 1911	1923	1924
Ormand, J. W., Monroe	....	....
Pearson, Raymond, Monroe; N. C. Med. Coll., 1922	1923	1924
Perkins, David R., Marshville; Balt. Med. Coll., 1903	1906	1907
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919

VANCE COUNTY SOCIETY

President: Wm. H. Furman, Henderson; Jeff. Med. Coll., 1910	1910	1912
Secretary: J. H. Wheeler, Henderson; Jeff. Med. Coll., 1918	1918	1920
Allen, Benjamin G., Henderson; Columbia Univ., 1904	1904	1908
Bass, H. H., Jr.	....	....
Cheatham, Goode, Henderson; N. C. Med. Coll., 1895	1895	1896
Fenner, Edwin F., Henderson; Univ. of Md., 1905	1906	1908
Gill, Robt. J., Henderson; Univ. of Pa., 1867	1889*	1900
Harris, Fletcher R., Henderson (Hon.); Univ. of Va., 1881	1883	1883
Newcombe, A. P., Jr., Henderson; Jeff. Med. Coll., 1922	1922	1924
Newell, H. A., Henderson; P. and S., Balt., 1906	1906	1906
Royster, Thomas S., Henderson; Univ. of Pa., 1916	1916	1924
Upchurch, Robert T., Henderson; Jeff. Med. Coll., 1908	1908	1910

WAKE COUNTY SOCIETY

President: Zebulon M. Caveness, Raleigh; Univ. of N. C., 1903	1903	1903
Secretary: R. B. Wilkins, Raleigh; N. C. Med. Coll., 1913	1913	1915
Abernethy, Claude O., Raleigh; Univ. of N. C., 1906	1906	1907
Anderson, Albert, Raleigh (Hon.); Univ. of Va., 1888	1889	1890
Ashby, J. W., Raleigh; Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Baxter, O. D., Raleigh; Jeff. Med. Coll., 1924	1924	1929
Bell, Carl W., Raleigh; Coll. of P. and S., Balt., 1914	1915	1916
Buffaloe, J. S., Garner; Balt. Med. Coll., 1900	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins Med. Sch., 1922	1924	1925
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915	1915	1918
Burt, B. W., Holly Springs; P. and S., Balt., 1886	1886	1904
Byrd, W. C., Morrisville; Jeff. Med. Coll., 1923	1923	1924
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Carpenter, Coy C., Wake Forest; Syracuse Univ. 1924	1924	1927
Carroll, E. D. Dixon, Raleigh; Women's Med. Coll., N. Y., 1895	1900	1900
Caviness, V. S., Raleigh; Jeff. Med. Coll., 1921	1921	1925
Cheatham, G. R., Raleigh; Grad. Univ. and Bellevue Med., N. Y., 1926	1926	1930
Cheek, C. E., Fuquay Springs; Univ. Coll. of Med., Va., 1912	1912	1914
Collins, George, Raleigh; Jeff. Med. Coll., 1920	1921	1922
Combs, Jos. J., Raleigh; Grad. Columbia Univ. of C. and P., 1926	1926	1929
Cooper, G. M., Raleigh; Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., Rich., 1914	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920	1920	1923

Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Eldridge, Chas. P., Raleigh; Univ. of Pa., 1926	1926	1927
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915	1915	1917
Flowers, Clarence A., Wendell; P. and S., Balt., 1905	1907	1910
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913	1915	1916
Fox, P. G., Raleigh; Med. Coll. of Va., 1922	1923	1929
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh; Univ. of Md., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1887	1887	1887
Goodwin, O. S., Apex; Jeff. Med. Coll., 1923	1923	1926
Harris, J. H., Raleigh; Jeff. Med. Coll., 1914	1914	1930
Haywood, Hubert B., Jr., Raleigh; Univ. of Pa., 1909	1909	1910
Hester, Jos. R., Wendell; Univ. of N. C., 1910	1910	1912
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh; P. and S., Balt., 1897	1896	1904
Hunter, J. P., Cary; Jeff. Med. Coll., 1919	1919	1921
Jenkins, Charles L., Raleigh (Hon.); N. Y. Univ. Med. Coll., 1890	1890	1894
Jones, Carey C., Cary; Jeff. Med. Coll., 1920	1920	1923
Jordan, Thos. M., Raleigh (Hon.); P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh; Univ. of Pa., 1911	1911	1912
Judd, James M., Varina; Balt. Med. Coll., 1897	1897	1901
King, E. S., Wake Forest; Grad. Jeff. Med. Coll., 1927	1927	1930
Kitchin, Thurman D., Wake Forest; Jeff. Med. Coll., 1908	1908	1908
Knox, Augustus W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1874	1878	1880
Lacy, Thomas A., State Hospital, Raleigh; Emory Univ., 1927	1927	1928
Lamm, Isaac W., Raleigh; Univ. Coll. of Med., Va., 1899	1899	1900
Lane, Bessie, Raleigh; Women's Med. Coll. of Pa., 1921	1921	1926
Laughinghouse, Chas. O'H., Raleigh (Hon.); Univ. of Pa., 1893	1893	1894
Lawrence, B. J., Raleigh; Jeff. Med. Coll., 1918	1918	1920
McDowell, F. C., Zebulon; Univ. of Pa., 1902	1913	1916
McGee, James Wm., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1888	1888	1888
Mitchener, J. S., Raleigh; Johns Hopkins Univ., 1915	1915	1918
Monk, G. M., Raleigh	....	1929
McKee, John S., Raleigh; Univ. of Md., 1907	1908	1909
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Neal, Paul N., Raleigh; Harvard, 1919	1920	1921
Noble, R. P., Raleigh; Univ. of N. C., 1907	1907	1916
Norman, J. H., Raleigh; Tulane Univ., 1905	1905	1923
Oliver, A. S., Raleigh; Jeff. Med. Coll., 1914	1914	1919
Owen, J. F., Dix Hill, Raleigh; Jeff. Med. Coll.	1920	1927
Powers, John B., Wake Forest; Columbia, N. Y. City, 1907	1907	1907
Proctor, I. M., Raleigh; Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917
Rand, E. G., Raleigh; Grad. Univ. of Pa., 1926	1926	1929
Ray, O. L., Raleigh, Rt. 1; Univ. Coll. of Med., Richmond, 1899	1899	1904
Register, F. M., Raleigh; Ky. School of Med., 1893	1891	1904

Richardson, Marvin T., Raleigh; Grad. Univ. of Pa., 1928.....	1929	1930
Rogers, Jas. Rufus, Raleigh; P. and S., Balt., 1886.....	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911.....	1911	1913
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894.....	1894	1895
Royster, W. I., Raleigh (Hon.); Bellevue Hosp. Med. Coll., N. Y., 1869.....	1869	1874
Shore, Clarence A., Raleigh; Johns Hopkins, 1908.....	1909	1909
Sisk, C. N., Raleigh; Univ. of Nashville, 1905.....	1922	1923
Smith, Sidney, Prof. Bldg., Raleigh; Grad. Tulane Univ., 1925..	1925	1930
Smith, W. G., Wendell; Med. Coll. of Va.....	1926	....
Soady, J. H., Garner; McGill Univ., 1903; Toronto Univ., 1905..	1924	1926
Strickland, W. M., Wendell; Med. Coll. of Va., 1919.....	1921	1923
Templeton, James McP., Cary; Balt. Med. Coll., 1882.....	1882	1893
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914.....	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906.....	1907	1925
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917.....	1920	1923
Ward, W. T., Raleigh; Univ. of Md., 1925.....	1925	1927
Watson, John B., Raleigh; Univ. of N. C., 1908.....	1908	1909
Weathers, R. R., Knightdale; Richmond Med. Coll.....	1926	1928
West, Louis N., Raleigh; Jeff. Med. Coll., 1912.....	1912	1915
Wilkerson, Charles B., Raleigh; Univ. of N. C., 1906.....	1906	1908
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922.....	1922	1923
Winston, P. H., State Hospital, Raleigh; Grad. Med. School of Va., 1929.....	1929	1930
Wright, J. B., Raleigh (Hon.); Univ. Coll. of Med., Va., 1899..	1899	1900
Yarborough, Frank R., Cary; University of Penn., 1923.....	1925	1926

WARREN COUNTY SOCIETY

President: C. H. Peete, Warrenton; Univ. of Pa., 1903.....	1906	1911
Secretary: G. H. Macon, Warrenton; Univ. Coll. of Med., Va., 1910.....	1910	1911
Foster, H. H., Norlina; Jeff. Med. Coll., 1919.....	1919	1923
Holt, T. J., Warrenton; Med. Coll. of Va., 1904.....	1904	1911
Hunter, Frank P., Warrenton; Univ. of Va., 1925.....	1925	1927
Rodgers, W. D., Jr., Warrenton; Jeff. Med. Coll., 1913.....	1913	1915

WASHINGTON-TYRRELL COUNTIES SOCIETY

Bray, T. L., Plymouth; Univ. of Md., 1916.....	1916	1919
Harrell, W. H., Creswell.....	....	....
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917.....	1917	1922
Speight, John W., Roper; Ky. Sch. of Med., 1885.....	1885	1904
Ward, William H., Plymouth (Hon.); Univ. of Md., 1881....	1886	1886

WAYNE COUNTY SOCIETY

President: J. W. Wilkins, Mount Olive; Med. Coll. of Va., 1913	1913	1917
Secretary: D. E. Best, Goldsboro; Univ. of Md., 1924.....	1924	1926
Bizzell, M. E., Goldsboro; Tulane Univ., 1923.....	1923	1925
Bizzell, Thomas M., Goldsboro; Univ. of Md., 1908.....	1908	1916
Cobb, Donnell B., Goldsboro; Univ. of Pa., 1921.....	1921	1926
Cobb, W. H., Jr., Goldsboro; Jeff. Med. Coll., 1889.....	1889	1890
Corbet, L. W., Goldsboro; Med. Coll. of S. C., 1915.....	1925	1924
Crawford, W. J., Goldsboro; Med. Coll. of Va., 1922.....	1922	1923

Dale, G. C., Goldsboro; Univ. of Pa., 1925	1925	1927
Henderson, C. C., Mt. Olive; Univ. of Md., 1914	1914	1919
Henderson, T. B., Goldsboro; Med. Coll. of Va., 1906	1914	1915
Hollingsworth, E. T., Goldsboro; N. C. Med. Coll., 1912	1912	1915
Howard, C. E., Goldsboro; Univ. of Pa., 1925	1925	1927
Irwin, Henderson, Goldsboro; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911	1911	1917
Jones, Clara E., Goldsboro (Hon.); Women's Med. Coll. of Pa., 1894	1894	1897
Linville, W. C., Goldsboro; Univ. of Md., 1903	1903	1923
Lister, J. L., Mt. Olive; Med. Coll. of Va., 1896	1896	1909
Miller., Robert B., Goldsboro; Med. Coll. of Va., 1898	1900	1902
Moore, J. E., Mount Olive; Tenn. Med. Coll., 1900	1898	1918
Morris, George B., Goldsboro; Univ. of Md., 1910	1910	1912
Morris, G. Dillon, Goldsboro; Univ. of Pa., 1924	1924	1926
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Person, H. M., Goldsboro; N. C. Med. Coll., 1913	1913	1916
Rand, C. H., Fremont; Univ. of Pa	1926	1928
Rose, David J., Goldsboro; Tulane Univ., 1922	1922	1924
Rose, Jim, Goldsboro	....	....
Smith, Paul, Pikeville; Washington Univ., St. Louis, 1927	1927	1929
Smith, R. A., Goldsboro (Hon.); Bellevue Hospital, 1882	1882	1887
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906	1907	1912
Spicer, John, Goldsboro; Bellevue Med., 1889	1890	1904
Spicer, William, Goldsboro; Bellevue Hosp. Med. Coll., 1898	1897	1904
Steel, Wm. C., Mt. Olive; Univ. of Md., 1891	1891	1894
Strosnider, Charles F., Goldsboro; Univ. of Md., 1909	1910	1913
Sutton, William G., Seven Springs; Jeff. Med. Coll., 1889	1889	1896
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923	1923	1924
Whelpley, Frank L., Goldsboro; Missouri Univ., 1902	1918	1918
Woodard, A. G., Goldsboro; Univ. of N. C., 1907	1907	1909

WILKES COUNTY SOCIETY

President: Fred C. Hubbard, North Wilkesboro; Jeff. Med. Coll., 1918	1919	1921
Secretary: James H. McNeill, North Wilkesboro; Geo. Wash. Univ. Med. School, 1926	1926	1927
Duncan, Julian E., N. Wilkesboro; Univ. Coll. of Med., Va., 1907	1907	1908
Eller, Albert J., Readybranch; P. and S., Balt., 1893	1895	1898
Gilreath, Frank H., N. Wilkesboro (Hon.); Univ. of Nashville, 1898	1898	1898
Hutchins, E. M., North Wilkesboro; N. C. Med. Coll., 1896	1896	1904
Pegram, R. W. S., Canton; Balt. Med. Coll., 1892	1894	1907
Sink, C. S., North Wilkesboro; N. C. Med. Coll., 1912	1912	1913
Somers, L. P., New Castle; Univ. of Md., 1897	1889*	1904
Triplett, W. R., N. Wilkesboro; N. C. Med. Coll., 1914	1915	1920
White, John W., Wilkesboro (Hon.); Jeff. Med. Coll., 1889	1889	1890

WILSON COUNTY SOCIETY

President: C. L. Swindell, Wilson; Univ. of Md., 1909	1909	1920
Secretary: Malcolm P. Mullen, Wilson; Emory U. Med. School, 1927	1927	1928
Anderson, Wade H., Wilson; Univ. of Va., 1902	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921	1921	1922
Best, Henry B., Wilson; Univ. of N. C., 1907	1907	1908
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	1924	1924
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Dickinson, Elijah T., Wilson (Hon.); Med. Coll. of Va., 1895	1895	1900
Eagles, Charles S., Saratoga; Univ. of N. C., 1909	1909	1910
Freeman, Roma, Bailey	....	....
Grady, Leland V., Wilson, Rt. 2; N. C. Med. Coll., 1913	1913	1914
Hackney, Ben. H., Lucama; Tulane Univ., 1911	1911	1913
Herring, Benj. S., Wilson (Hon.); Univ. of Mich. 1900	1901	1901
Lane, P. P., Wilson; Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson (Hon.); Univ. of Md., 1886	1885	1894
McClees, E. C., Elm City Med. Coll. of Va., 1917	1920	1920
Mitchell, G. W., Wilson; Univ. Coll. of Med., Va., 1913	1913	1920
Moore, Chas. E., Wilson (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.); Univ. of Md., 1883	1883	1890
Person, T. E., Stantonsburg; N. C. Med. Coll., 1911	1911	1914
Pittman, M. A., Wilson; Jeff. Med. Coll., 1921	1924	1923
Saliba, Michael M., Wilson; Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson; Jeff. Med. Coll., 1912	1917	1918
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Smith, F. G., Wilson	....	....
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920
Woodard, G. B., Wilson; Med. Coll. of Va., 1915	1915	1916

YADKIN COUNTY SOCIETY

President: L. S. Hall	....	....
Secretary: N. W. Mackie, Yadkinville; Wash. Univ., 1928	1928	1929
Bryant, Charles G., Jonesville; Louisville Med. Coll., 1894	1903	1904
Finney, J. R., Boonville; Grad. N. C. Med. Coll., 1910	1910	1911
Leak, Wharton, G., East Bend; N. C. Med. Coll., 1900	1899	1904
Martin, R. E., East Bend; Univ. N. C., 1912	1912	1922
Russell, S. L., Yadkinville	....	1904
Shore, T. W. Boonville	....	1904
Stempson, R. T., East Bend	....	....
Weaver, H. S., Hamptonville; Jeff. Med. Coll., 1925	1925	1926

YANCEY COUNTY SOCIETY

President:	....	....
Secretary: W. Burdett Robertson, Burnsville; Baltimore Med. Coll., 1898	1908	1908
Cheadle, C. M., Micaville; Keokuk Med. Coll., 1898	1919	1921
Fairchilds, J. M., Celo	....	1927
Peek, W. A., Ramseytown; non-graduate	1905*	1919

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